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ABSTRACT

This report constitutes a synthesis of 10 years of research which was conducted to assist Ontario boards of education in implementing and evaluating French immersion programs in their jurisdictions. The immersion programs evaluated include three major alternatives: (1) the early total French immersion programs of the Carleton, Ottawa, and Toronto Boards of Education; (2) the early partial French immersion program of the Elgin County Board of Education; and (3) the late partial French immersion program of the Peel County Board of Education. Reference is also made to evaluations of similar immersion programs evaluated by other researchers in Ontario and throughout Canada. The report includes a description of the programs and information on the characteristics of some other bilingual education programs found in Ontario. In addition, the following information is provided: (1) discussion of the specific research questions and the research design; (2) presentation of the evaluation findings concerning the linguistic effects; (3) presentation of the findings on the academic effects; and (4) discussion of some social and psychological dimensions of French immersion programs. A bibliography is included on immersion education in Canada and the United States. (Author/AMH)

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BILINGUAL EDUCATION IN ONTARIO: A DECADE OF RESEARCH

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Abstract

This report constitutes a synthesis of a decade of research conducted by the Bilingual Education Project of the Ontario Institute for Studies in Education. The Project was conceived in 1970 in response to requests from several Ontario boards of education for assistance in implementing and evaluating French immersion programs in their jurisdictions.

The immersion programs evaluated include three major alternatives: the early total French immersion programs of the Carleton, Ottawa, and Toronto Boards of Education; the early partial French immersion program of the Elgin County Board of Education; and the late partial French immersion program of the Peel County Board of Education. In this report, reference is also made to evaluations of similar immersion programs evaluated by other researchers in Ontario and throughout Canada.

The report includes a description of the specific programs studied by the Bilingual Education Project, and information on the characteristics of some other bilingual education programs found in Ontario (Chapter 2). In Chapter 3, the specific research questions addressed in the evaluation are listed and discussed. Information on the research design and procedures is provided, and some issues which generally arise in the evaluation of educational programs are explored. The evaluation findings concerning the linguistic effects are presented in Chapter 4, the

academic effects in Chapter 5, and some social and psychological dimensions of French immersion programs in Chapter 6. The final chapter serves as a summary and presents the conclusions of the report. It is followed by a comprehensive bibliography on immersion education in Canada and the United States and a short appendix, which is a list of project outputs.

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No major report can be the product of its authors alone. Jill Kamin helped to compile the bibliography, and in doing so demonstrated to us the many advantages of computerized lists. She also typed the manuscript into the computer, making us vow never to type another manuscript without the aid of such modern technological advances. Birgit Harley edited our manuscript and provided insightful comments along the way. Our warmest thanks go to Jill and Birgit for their tireless and constantly cheerful support.

Although we have been its Principal Investigators, the Bilingual Education Project has always been a collaborative effort. Our reports are a result of the team of individuals who have worked together over the years and without whom the research and its outputs would not be the same. We extend our thanks to Christine Andrew, Henri Barik, Gila Hanna, Birgit Harley, Jill Kamin, Grace Lake, Edna Nwanunobi, Kathy McTavish, Kathy Scott, and Lindsay Shanahan for their participation; to Stacy Churchill, Jim Cummins, and David H.H. Stern for their feedback, and to Charlotte Nadeau for her secretarial involvement.

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Finally, and most important, we want to express our sincere thanks to all the participating school boards, board and school personnel, and especially to the students and their parents for their patience and their cooperation. We hope this report will be of some use to all of you.

1 Introduction

Background

Over a decade has passed since the first French immersion program was introduced in publicly supported schools in Ontario. In 1969, the Ottawa Roman Catholic Separate School Board established a number of experimental French immersion classes modelled on the "original" immersion program which had been launched four years earlier in St. Lambert, a largely English-speaking suburb of Montreal. The St. Lambert "experiment", as this Quebec model came to be known, has been thoroughly documented (Cziko et al., 1978; Lambert and Tucker, 1972), and its success has often been cited by others seeking to set up their own French immersion programs both inside and outside the province of Quebec. It has been argued, however, that the success of the St. Lambert program may have depended to some extent on its location in a province where the language of the majority is French. For this reason, among others, French immersion programs established elsewhere have generally been accompanied by research projects designed to evaluate their effects.

One such project has been the Bilingual Education Project of the Ontario Institute for Studies in Education (OISE). The Project was conceived in 1970 in response to requests from several Ontario boards of education for assistance in implementing and evaluating French immersion programs in their jurisdictions. Initially, funds were obtained from the OISE Office of Research and Development to support the Project's work. Subsequently, both OISE and the Ontario Ministry of Education, through its program of grants-in-aid of educational research, provided funds to sustain a long-term evaluation of French immersion programs in Ontario.

Scope of the Study

The immersion programs studied over the years include three major alternatives: the early total French immersion programs of the Carleton, Ottawa, and Toronto Boards of Education; the early partial French immersion program of the Elgin County Board of Education; and the late partial French immersion program of the Peel County Board of Education. These three variations are representative of immersion programs found across Ontario and the other Canadian provinces in that they share the following characteristics:

a. The programs, which are optional, serve a primarily English-speaking school population.

b. In the initial year(s) of the program, from one-half to an entire school day is devoted to instruction in French. French is the medium of instruction, rather than a separate school subject.

c. Students in immersion programs study the same curriculum content as their peers in the regular English program.

The specific programs that have been evaluated by the Bilingual Education Project are described in detail in Chapter 2. It is important to note that French immersion programs as they exist in Ontario represent one of a variety of possible approaches to bilingual education. In the United States, for example, many bilingual education programs begin with instruction in the child's first language and move gradually to instruction in English. These programs have been labelled 'transitional' bilingual education because a transition is made from the minority language spoken by members of an ethnic group to English, the language of the majority of the population of the United States. In Canada, French immersion programs serve the English-speaking majority by giving students access to French, one of Canada's two official languages.

Current Enrolment

Since the early seventies, the growth in French immersion programs in Ontario has been dramatic. Defining immersion as a program where half or more of the instruction occurs in the second language, Ontario Ministry of Education figures for the 1979-80 academic year show more than 28 000 students enrolled in such programs at the elementary school level (Kindergarten through grade 8). This represents about 2.5% of the total English-speaking student population at these grade levels in the province.

Nature of the Research

In all the Canadian research studies on French immersion, the focus has been on comparing the progress of students enrolled in the experimental programs with that of their peers enrolled in regular English programs. This research emphasis has been motivated by the underlying philosophy of immersion education -- that the students' education should be similar in both the immersion and regular English programs offered in any given school system, with the only major difference being the language through which the teacher and students communicate in the classroom.

Outline of the Study

In the next chapter, an overview of the French immersion programs studied by the Bilingual Education Project is presented, and the characteristics of some other bilingual education programs found in Ontario are summarized. In Chapter 3, the specific research questions addressed in the evaluation are listed and discussed, the research design and procedures are described, and some issues which generally arise in the evaluation of educational programs are explored. The evaluation findings concerning the linguistic effects are presented in Chapter 4, the academic effects in Chapter 5, and some social and psychological dimensions of French immersion programs in Chapter 6. In these chapters, results from the early total, early partial, and late partial French immersion programs evaluated by the Bilingual Education Project are highlighted, although reference is made to studies of similar bilingual education programs in Ontario and throughout Canada. The final chapter serves as a summary of this report. It is followed by a comprehensive bibliography on immersion education in Canada and the United States.

2 Bilingual Education Programs in Ontario

In this chapter, the basic principles that underlie immersion education are discussed in general terms, and the specific bilingual programs studied by the Bilingual Education Project are described in some detail.

The Process

The word "process" is used here to represent what actually goes on in the classroom. What are the instructional principles on which immersion education is based? What are the special features of the teachers' approach in the immersion classroom?

As noted in Chapter 1, immersion education is based on the principle that students receive the same type of education as they would in the regular English program, but that the medium of instruction, the language through which material is presented and discussed, is French. Immersion programs have been described as providing a naturalistic setting for second language acquisition; that is, the second language is acquired in much the same manner as children learn their first language, by using language in real communicative situations. In both cases, the learner is provided (by the parents or the teacher) with rich language input and gradually begins to communicate in that language. In early immersion settings particularly, the practice in the first and second years of the program is to expose children to a large amount of second language use (by the teacher), but to let them talk among themselves and to the teacher in their home language, English. Thus, as should be the case in any classroom, the teacher accepts and starts from the existing language and interests of the children. Gradually, as they feel able to, students begin to use French vocabulary items and simple structures until, in the latter part of their second year of schooling, French is firmly established as the language of the classroom.

Let us look more closely at immersion classroom methodology, first for early immersion programs, and then for late immersion programs. Early immersion education began in Canada with the idea that through the exclusive use of French by the teachers in communicating with their students, the second language would be acquired incidentally -- incidentally, that is, to learning about the content of what was being communicated. The focus of the teachers has been on conveying the content to their students and on responding to the content of what their students are saying, no matter how they are saying it, or in which language it is being said. Here the importance of being able to understand the child´s home language is clear. Were the teachers not able to understand English, they would be unable to respond relevantly to the child´s questions or statements. There would then be no meaningful conversations, which are of crucial importance in language acquisition.

The initial focus, then, in early immersion methodology is on developing French language comprehension skills. It is important to remember that comprehension is a skill that is to some extent separate from production. In natural language acquisition, comprehension precedes (and exceeds) production. Indeed, one might characterize the process as production flowing from comprehension.

In spite of the initial focus on developing comprehension skills, it would be inappropriate to suggest that this is accomplished by just talking to the students. Specific instructional techniques are used. Key lexical items are taught in the context of conveying real messages through the use of pictures, gestures, and other body language cues. The initial emphasis is on teaching relevant vocabulary, so that when it is used in the natural flow of speech, the general content of what is being expressed can be understood.

Early immersion education has been characterized as incorporating little explicit instruction about the second language. This characterization is derived from the description of immersion as focussing on conveying content rather than on the form in which content is conveyed. However, as has already been noted, focussing on content does involve the explicit teaching of vocabulary, albeit in context and not as isolated lists of words to be memorized. Similarly, grammmar is taught not as isolated rules to produce structures or patterns, but as a means of making use of words and structures to communicate more effectively.

This is accomplished to some extent through the use of implicit correction by teachers during student-teacher interaction in a way similar to what occurs when native speakers interact with non-native speakers (see, for example, Hatch, 1979; Krashen, 1980) or adults with children (see, for example, Snow and Ferguson, 1977). The explicit teaching of grammar and structures, however, is gradually incorporated into the curriculum.

In a study of the teaching of French listening and speaking skills in elementary immersion classes, which was undertaken by Ireland, Gunnell, and Santerre (1980), some language-teaching strategies and techniques used by immersion teachers were identified. The analysis was based on observations and tape-recordings of 71 visits to immersion classes from Kindergarten to grade 6 levels. The study shows that in Kindergarten and grade 1 there is very little explicit teaching of grammar, but as the children become older, the teacher's speech includes more explicit reference to, and instruction about, grammatical and structural points. From about grade 3 on, there is an increase in the time spent on grammar explanations and exercises. For the most part, grammar is dealt with in specific lessons, rather than when the lesson is focussed on teaching academic content. Thus, immersion education incorporates instruction about the second language both implicitly and explicitly.

In a study of interactions between students and teachers in primary classrooms, Richards (1978) found that the classroom climate in grade 1 and 2 total French immersion classrooms was similar to that found in regular English classrooms at the same grade levels. Further, no differences were noted in the interaction patterns in the two types of classrooms. Finally, Richards (1978:223) concludes that immersion programs may have a positive influence on teaching style:

> The encouragement of pupil initiations, use of personal experiences to enrich children's language use, and use of teaching strategies such as games and singing were all typical of the immersion teachers. These activities were participated in eagerly by the children, and seemed to contribute to a positive classroom climate.

There is little systematic information available on what actually goes on in late immersion classrooms. However, a study by Chaudron (1977a) focusses on the errors made by late immersion students and strategies used by teachers for correcting those errors. Chaudron analysed transcripts from several geography, history, and French language arts classes at grades 8 and 9, and found that in all cases the emphasis was on correcting content rather than form. The fact that there were grammatical errors made in student responses to questions, for example, was subordinated in the teachers' minds to the accuracy of the subject matter of the students' comments.

As a general statement, then, the immersion approach to second language education in a Canadian context involves emphasizing the communication of meaningful content material through French, rather than focussing on the teaching of the second language itself. The three immersion program alternatives described below are all based on this principle, as are other similar bilingual education programs across Canada.

Overview of Program Alternatives

Three main French immersion alternatives have been researched and evaluated by the Bilingual Education Project.

The early total French immersion program studied in the Carleton, Ottawa, and Toronto Boards of Education begins at the Kindergarten level where the entire (half-day) program is conducted in French. The language of instruction throughout grades 1 to 4 is also French, with the exception of a daily period of English language arts which may be introduced in grade 2 or 3. At grade 5, from 60% to 80% of the school day is still allocated to instruction in French, with the percentage of French dropping at grade 6 to between 40% and 50%. At grades 7 and 8, half the curriculum is taught in French and half in English. The school subject areas taught in one language or the other vary among boards and even among schools, in order that the best use can be made of the teachers available. For example, if a school has a bilingual science specialist on staff at grade 6 or 7, science might be chosen as one of the subjects to be taught in French at these grade levels.

The evaluation of the early total French immersion programs began in 1970-71 (in Carleton and Ottawa) and

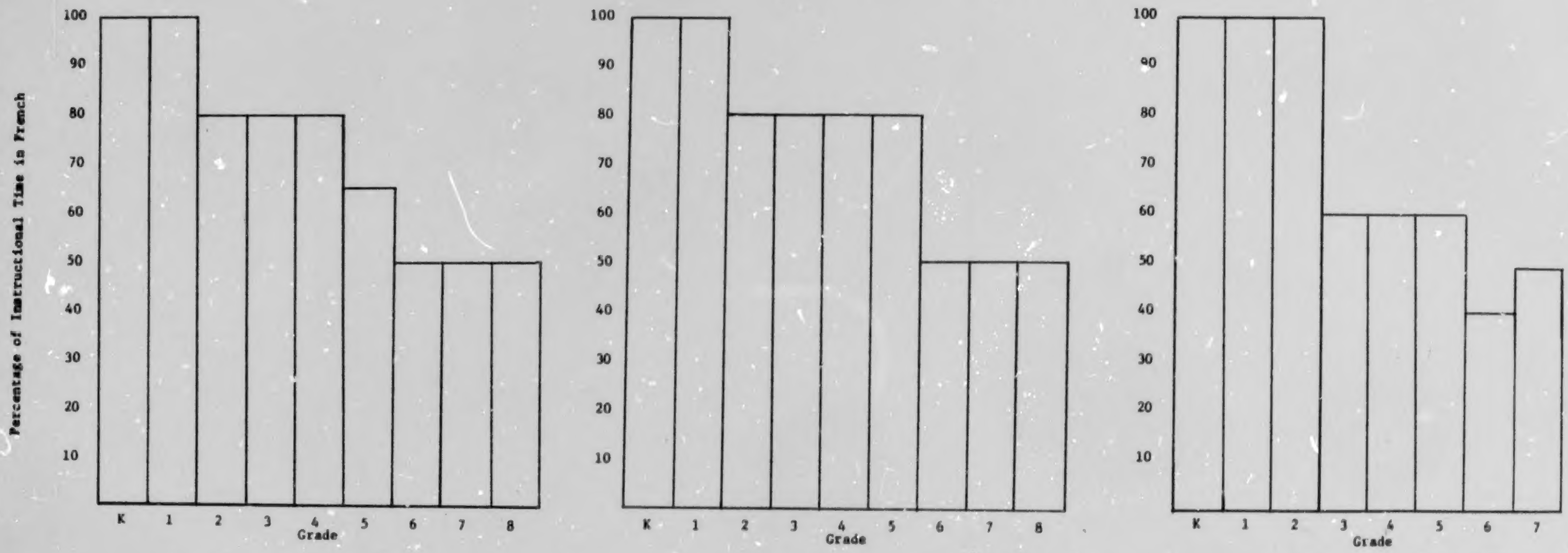
1971-72 (in Allenby Public School in Toronto). When testing ended in 1979-80, the first groups of students to enrol had reached grades 8 and 7 respectively. The secondary school follow-up programs have been designed so that the early immersion students may take three to five subject options in French at high school.

Figure 2.1 depicts the early immersion program characteristics described above. It shows that the percentage of time spent in French at each grade level of this program alternative varies slightly among boards, although the general structure of the program is similar.

The early partial French immersion program in Elgin County begins at the grade 1 level (following a half-day English Kindergarten) with the two languages of instruction used equally throughout the students' elementary schooling (see Figure 2.2). Since its inception in 1970-71, the partial immersion program has been limited in its intake to one class each year in only one school. Thus, although annual program evaluations were conducted until 1979, the generalizability of the Elgin County findings has always been problematic. In 1975, however, the Ottawa Roman Catholic Separate School Board established a similar bilingual program (or partial immersion program) which operates throughout the board. Since it began, that program has been evaluated annually under the direction of Dr. H.P. Edwards (University of Ottawa). In Chapters 4 and 5, the Elgin County results will be supplemented by results from evaluations of the more extensive program reported on by

Figure 2.1

Percentage of Instructional Time in French: Early Total French Immersion*



a. Carleton Board of Education

b. Ottawa Board of Education

c. Toronto Board of Education

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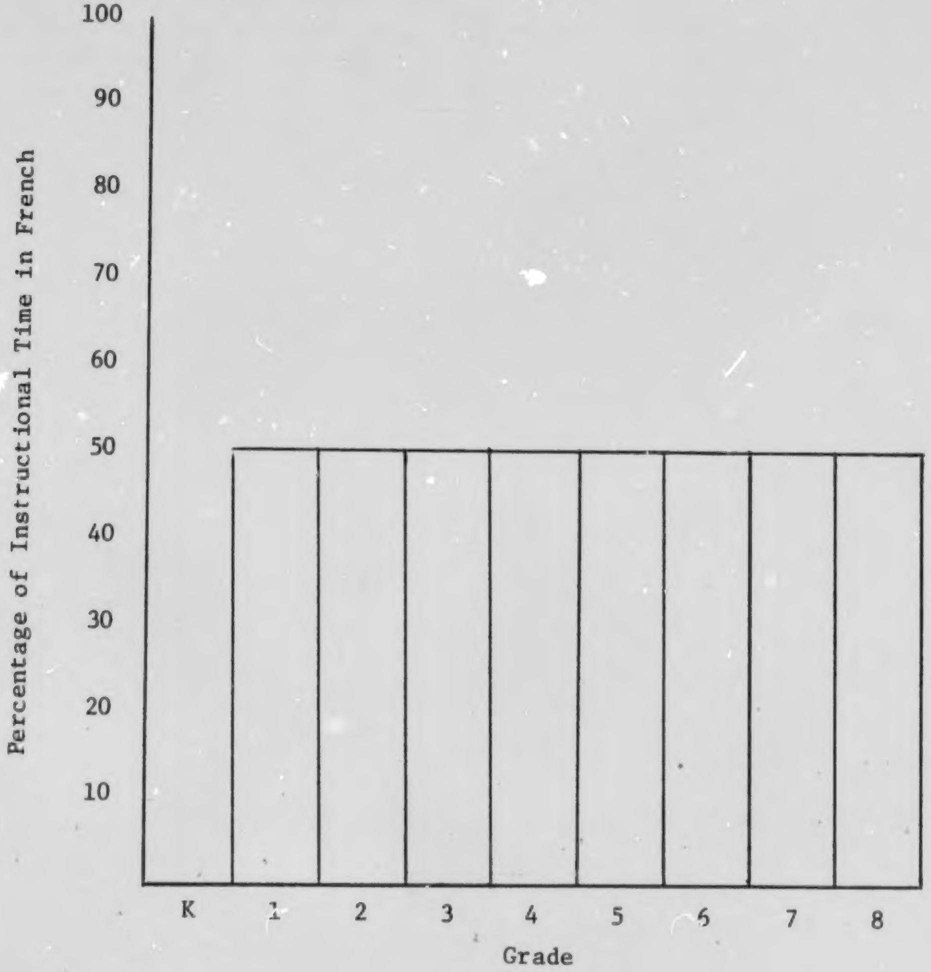
* All percentages are approximate and have been rounded to the nearest 5%. Percentages of instructional time are calculated on the basis of a 270-minute school day at grades 1-6 and a 300-minute day at grades 7-13.

Figure 2.2

Percentage of Instructional Time in French: Early Partial French Immersion in Elgin County*



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* All percentages are approximate and have been rounded to the nearest 5%. Percentages of instructional time are calculated on the basis of a 270-minute day at grades 1-6 and a 300-minute day at grades 7-13.

Edwards, McCarrey, and Fu (1980). The Ottawa Separate program differs from the Elgin County program in that it begins with a full-day Kindergarten in which 50% of the school day is devoted to instruction in French and 50% to instruction in English.

The late French immersion program begins at grade 8 in the Peel County Board of Education. The groups of students tested since 1970-71 began studying French in daily 20- to 30-minute periods at either grade 6 or grade 7. Approximately 55% to 70% of the grade 8 curriculum is instructed in French, followed in grades 9 and 10 with about 40% of the curriculum, usually history, geography, and French language arts, taught in French. At grade 11, some late immersion groups in Peel County have taken two subjects (25%) in French. For others, no school subject has been available in French at grade 11 aside from core French (where post-immersion and regular English program students have, in most cases, been combined in the same class). At grades 12 and 13, the only option available in French to post-immersion students has been core French (in daily French as a second language periods).

A similar program now operates in the Toronto Board of Education (at Glenview Senior Public School) under the label "late extended" French. Although the Bilingual Education Project was involved in assessing this program only once (in 1979), the results serve as an important complement to the Peel County findings and will be discussed in Chapter 4. For the same reason, findings from the evaluation of late immersion programs operating in the Carleton and Ottawa Boards of Education (Morrison et al., 1979) are also included wherever these are relevant.

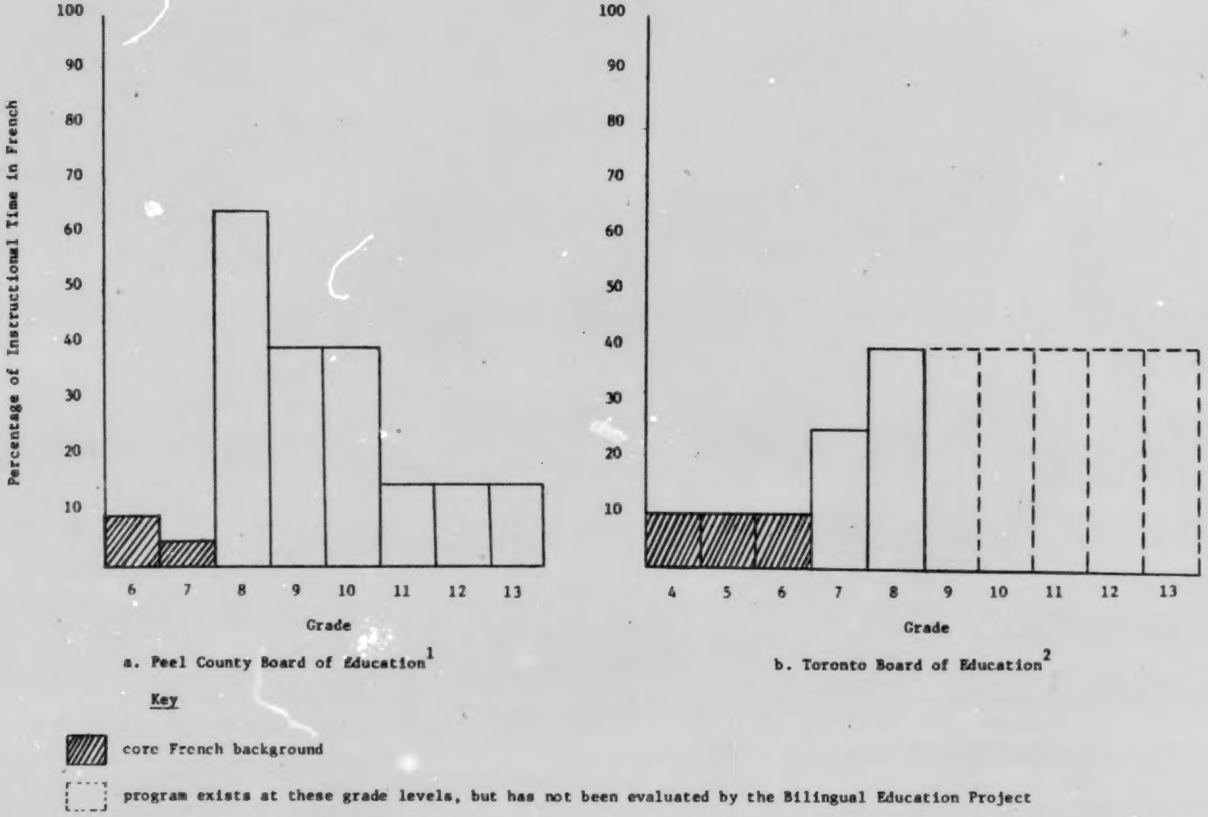
The Toronto, Carleton, and Ottawa late immersion programs differ in some respects from each other and from the program in Peel County. The French as a second language background of the Carleton and Ottawa students, who begin core French instruction at Kindergarten, is somewhat richer than that of the Toronto students, most of whom began studying French in daily 20-minute periods at the grade 4 level.

The late immersion programs evaluated by the Project are depicted in Figure 2.3. The variability in the structure of the programs is more pronounced in the case of late immersion than for the early immersion programs reviewed earlier (Figure 2.1). However, for the most part, the intensive "dose" of French comes in the initial year or two years of the programs, with the amount of exposure to instruction in French remaining constant or tapering off in subsequent years.

Another useful means of describing immersion programs involves the use of numbers reflecting the accumulated hours of instructional time spent in French. In Ontario, the funding formula used for French as a second language by the Ministry of Education reflects accumulated hours of French instruction. In a document published in April 1977, Teaching and Learning French as a Second Language, the Ministry states that it is not the aim of all programs to make pupils

Figure 2.3

Percentage of Instructional Time in French: Late French Immersion*



a. Peel County Board of Education[1]

b. Toronto Board of Education[2]

[1] Only one variant of the program is illustrated.

[2] Prior to entry at grade 7, students have varying exposure to core French; only one pattern is shown here.

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* All percentages are approximate and have been rounded to the nearest 5%. Percentages of instructional time are calculated on the basis of a 270-minute school day at grades 1-6 and a 300-minute day at grades 7-13.

fully bilingual, but that through different numbers of hours of French instruction, one of three levels of proficiency may be achieved. The levels are designated as the basic level, the middle level, and the top level. The basic level is considered to be achievable through at least 1200 hours of French instruction during the student's school career. It should enable the student to acquire a fundamental knowledge of the language, the ability to participate in simple conversation, the ability to read simple texts, and the ability to resume the study of French in later life. The middle level is considered achievable through at least 2100 hours of French instruction during the student's school career. It is expected to enable the student to read newspapers and books of personal interest with occasional help from a dictionary, to understand radio and television, to participate adequately in conversation, and to function reasonably well in a French-speaking community after a few months' residence. The top level is achievable through at least 5000 hours of French instruction during the student's school career. It should enable the student to continue his or her education using French as the language of instruction at the college or university level, to accept employment using French as the working language, and to participate easily in conversation.

The extent to which these expectations can be considered realistic has not yet been empirically tested, although in Chapter 4 some results will be presented that provide relevant information on what can be achieved in each of the bilingual programs considered.

The immediate use the reader can make of the accumulated hours notion is to make rapid (and somewhat superficial) comparisons among programs. Using the method of calculating accumulated hours indicated by the Ministry of Education, there are 810 instructional hours available in any one year at the grades 1-6 levels, and 900 hours at grade 7 and beyond. (Kindergarten programs are generally half-day programs which yield 405 instructional hours per year.) By the end of grade 8, students in the early total immersion programs have had the majority of their schooling in French (see Figure 2.1) and have reached, or have almost reached, the 5000-hour figure which represents the top level of proficiency as defined by the Ministry.

Students in the Elgin County early partial immersion program accumulate 3300 instructional hours in French by the end of grade 8. As we have seen, the background of core French instruction varies widely for students entering late immersion programs at grades 7 or 8 (Figure 2.3). Peel County students tested in annual evaluations have thus accumulated from 85 to 150 hours of French before entering the program, whereas Toronto students have a background varying from 90-315 hours (see Table 4.7). By the end of grade 8, therefore, Peel County late immersion students have accumulated 625 to 780 instructional hours in French, and Toronto late-extended students have had from 700 to 870 hours in French.

3 Major Issues in Research and Evaluation

This chapter outlines the eight main questions asked by parents and educators about the consequences of immersion education. In the first section, the reasons for the questions, the questions themselves, and the types of "tools" used to answer them are discussed. The second section outlines the design of the research and evaluation specifically undertaken by the Bilingual Education Project. For those interested, the third section outlines and discusses some of the issues that have arisen generally in psychometric research associated with the evaluation of educational programs. The actual results of much of the research and evaluation concerned with immersion education are considered in subsequent chapters.

Questions Frequently Asked about Immersion Education

1. What happens to the development of students' first language (English) skills? When French is used as the major vehicle of communication and instruction in the classroom, it is not surprising that concern about the normal development of first language skills would be expressed, especially with respect to those skills associated with school achievement such as reading, spelling, and other aspects of written expression. For this reason the English language skills of immersion students, and especially of

those in early immersion programs who would otherwise normally be learning to read and write in English, have been carefully monitored as the students progress through school.

Over the years and across a number of programs, a variety of techniques have been used to assess the English language skills of immersion students. Most commonly used have been the language sections of one of several commercially available standardized achievement tests such as the Metropolitan Achievement Tests, the Canadian Tests of Basic Skills, or the Peabody Picture Vocabulary Test. These tests measure such aspects of English language skills as vocabulary knowledge, reading, spelling, grammar, punctuation, and capitalization.

A standardized test is one which has been given to a large sample of students representative of those for whom the test is intended. The scores obtained become the standard, or norm, against which the performance of students taking the test at some later time can be compared. Scores from these tests are translated into grade equivalents or percentiles.

A grade equivalent refers to the performance that is expected of a student, or group of students, at a particular grade and month of their education, based on the performance of a large sample of students on whom the test was standardized. Thus, for example, if the average score in spelling of a class of grade 6 immersion students tested in April (eighth month of the sixth grade, expressed in figures as 6.8) translates into a grade equivalent of 6.10, this means that they are performing at a level that students in the tenth month (June) of their sixth grade would be expected to achieve. That is to say, their average score indicates a level of performance two months in advance of what is expected. Similarly, a grade equivalent of 6.1 would indicate a level of performance seven months behind what is expected.

A percentile refers to the percentage of the scores (obtained by students on whom the test was standardized) that fall below a certain score. Thus, if the average score in spelling of a class of grade 6 immersion students places them at the 70th percentile, this means that on the average they score better than 70% of the students on whom the test was standardized.

Techniques other than standardized achievement tests have also been used to monitor English language development. Several examples of such techniques are described below, each of which focusses on different aspects of English language proficiency. In most cases the performance of the immersion students is compared with that of students in the regular English program to determine whether the immersion students are progressing normally.

Students have been asked to write in English a short story about a picture or about one of several topics. Their written texts have been scored by teachers of the appropriate grade level on two levels: a global overall impressionistic rating and specific ratings according to such categories as spelling, sentence complexity and variety, organization, and originality (e.g. Genesee and Stanley, 1976). Their written texts have also been subjected to actual counts of errors in such areas as spelling, punctuation, grammar and morphology, and word usage (e.g. Swain, 1975a).

Similarly, students' speaking skills in English have been examined by having students retell a story that they have just heard in English. Tape-recordings of their stories have been rated on such dimensions as overall expressive ability, enunciation, rhythm, and intonation, as well as by making actual counts of grammatical errors and number of words produced (Lambert and Tucker, 1972).

Students' communicative skills in English and their sensitivity to the needs of listeners have been examined by having students explain to a listener how to do something in a situation where the speaker and listener are separated by an opaque screen (Genesee, Tucker, and Lambert, 1975).

Other aspects of first language development have been examined using word association tasks (e.g. Lambert and Tucker, 1972). Word association tasks, in which students are given a word and told to respond to it by saying the first word that comes into their minds, are examined according to the qualitative nature of the responses.

Other techniques which have been used are oral (Gray, 1980) and written (e.g. Swain, Lapkin, and Barik, 1976) "cloze" procedures. In these tasks, students are provided with a sentence or complete text in which they must fill in missing items (words or grammatical endings on words).

Completion of the task correctly or appropriately provides an indication of a student's overall intuitive feeling for the language (Berko, 1958) and proficiency in that language (Lapkin and Swain, 1977; Oller, 1979).

In addition, parents themselves have been asked whether they think that their children's ability to read in English, or their children's English language development has suffered due to their immersion experience (e.g. McEachern, 1980).

2. Do the immersion students learn more French than students in a core French program? How does their French compare to that of native speakers of French? Immersion programs were initiated in the belief that a more intensive exposure to French than was available in the core French program, as well as using the second language as a vehicle of communication would lead to higher levels of second language proficiency. The development of the second language skills of the immersion students has accordingly been carefully examined. In spite of the conviction that immersion education would lead to higher levels of proficiency in French than would traditional programs of French as a second language, there was a major question as to how much French immersion students would learn by being expected to function in French in their daily classroom activities with a minimum of formal language instruction.

Although there were several tests of French for second language learners on the market at the time when immersion programs began, none was available which was specifically developed for young children who were experiencing such an intensive exposure to French, but who were not native speakers of French. Thus, in the early years of French immersion at the primary level, considerable energy was spent on developing appropriate tests and, in some cases, developing standardized norms for these tests. A description of these tests as well as some of the other techniques for examining the French language skills of immersion students follows.

Among the standardized tests of French achievement available, the one most commonly used in the evaluation of immersion programs has been the Test de rendement en français. The various levels of this test were standardized on a sample of native French-speaking students in Montreal. The test was originally developed by the Commission des Ecoles Catholiques de Montréal and is now distributed by the Province of Quebec. At the various grade levels, the test measures such aspects of French achievement as the identification of sounds, word knowledge (synonyms, antonyms, definitions), grammar (verb conjugations, number and gender agreement, recognition of parts of speech, use of appropriate conjunctions), spelling, and reading comprehension.

The scores of this test are translated into "stanines", which are simply another way of expressing percentiles: if, for example, a score falls within the first stanine, this means that the student is performing as well as 0%-3% of the students on whom the test was standardized. The percentile equivalents of each stanine are shown in Table 3.1.

Other commonly used tests, which have now been standardized, include the French Comprehension Tests (Barik, 1975; 1976) and the _Tests de Lecture_ (Barik and Swain, 1979). The French Comprehension Tests are intended for Kindergarten and grade 1 immersion students and measure their understanding of spoken French words, sentences, and short stories. The _Tests de Lecture_ are reading comprehension tests intended for immersion students at grade 2 to 6 levels and consist of a series of short written texts, each followed by a number of questions about the passage.

Other commonly used tests include the _Test de compréhension auditive_, and the _Test de compréhension de l'écrit_. These tests have been developed by the Bilingual Education Project to measure listening and reading comprehension at the upper elementary and secondary school levels. In developing these tests, the purpose was to identify a number of real-life situations in which immersion students might have contact with French speakers, and to measure their understanding of the French used in each situation. Thus the _Test de compréhension auditive_ consists of a number of passages recorded from radio broadcasts, such as news items, sports items, weather forecasts, advertisements, and radio drama, each followed by one or more questions to which the students respond. Similarly, the _Test de comprehension de l'écrit_ consists of a number of

Table 3.1

Percentile Ranges of Stanine Values

Stanine	Percentile Range
9	96-100
8	89-95
7	77-88
6	60-76
5	40-59
4	23-39
3	11-22
2	4-10
1	0-3

written passages taken from various sources such as newspaper and magazine articles and advertisements, comic strips, horoscopes, television schedules, recipes, and poetic and prose literature.

Other means of examining students' performance in real-life situations have also been used. For example, students have been asked to complete a job application form and be interviewed by a prospective employer (Bruck, Lambert, and Tucker, 1975). Immersion students have been paired with francophone peers and their spontaneous interaction recorded (Bruck, Lambert, and Tucker, 1974; Szamosi, Swain, and Lapkin, 1979). Also, immersion students have been interviewed by adult francophones and their language analysed (e.g. Harley and Swain, 1978a) or judged by other francophones for its acceptability (Lepicq, 1980).

In addition, methods similar to those described above for monitoring first language development have been used to monitor second language skills. These include oral and written French cloze tests, as well as the evaluation of stories -- written or told in French -- on a number of dimensions.

3. Are the immersion students able to keep up with their English-educated peers in subject content taught to them in French? One major concern expressed by parents and educators about immersion programs was that, because subjects such as mathematics and science would be taught in French, the students would not learn as much as if they were taught in their first language (English). Although parents

wanted their children to learn French, they did not want this to happen at the expense of academic achievement. The concern was not limited to whether the students would learn as much as their English-educated peers, but also extended to whether, having acquired the knowledge through French, they would be able to transfer that knowledge for use in English contexts. Thus it was not enough to test the immersion students' achievement in, for example, mathematics and science by using tests written in the language of instruction (French). Rather the tests of subject achievement were usually given in English, even though the language of instruction about that subject was in French. Needless to say, this could put the immersion students at a disadvantage, and should be kept in mind when reading Chapter 5, where the results of testing academic achievement are discussed.

For the most part, the tests which have been used to evaluate academic achievement are standardized achievement tests. Typically the tests have been given both to immersion students and to students with similar characteristics in the regular English program, and their results have been compared to determine if there are any statistically significant differences between the two groups. In addition, the scores obtained have been expressed in terms of their percentiles or grade equivalents.

The tests which have most commonly been given include the mathematics, science, and/or study skills sections of the Canadian Tests of Basic Skills or the Metropolitan

Achievement Tests. Depending on the grade level being tested, the mathematics section involves subsections related to computations, mathematical concepts, and problem solving. The science section of the Metropolitan Achievement Tests consists of items related to life science, earth science, physical science, conservation, and health, and is only available for the upper elementary and secondary grade levels. From grade 3 on, the study skills section of the Canadian Tests of Basic Skills includes items related to map reading, reading graphs and tables, and knowledge and use of reference materials.

In addition, in a few instances, parents have been asked whether they think children in primary French immersion have more problems in mathematics than regular students, and whether their attendance in French immmersion classes hinders the growth of general knowledge (McEachern, 1980).

4. *Does participation in the immersion program hinder general intellectual or cognitive growth*? There still remains a belief among the general public that learning two languages will lead to cognitive confusion, slowing down cognitive and intellectual development. Indeed, many research findings up to the 1960s suggested that bilingual children obtained lower IQ scores than unilingual children. This research has been subjected to serious criticism, and many of the conclusions have been repudiated by the results of recent, better designed research (see Swain and Cummins, 1979, for a review). Due to this general concern, however,

the general intellectual growth of immersion students has been monitored largely through the use of IQ tests such as Raven's Coloured Progressive Matrices, the Otis-Lennon Mental Ability Test, and the Canadian Cognitive Abilities Test.

The Progressive Matrices test is a non-verbal measure of general intelligence. In this test the child selects from an array of designs the one that is appropriate to complete a larger pattern. The non-verbal battery of the Canadian Cognitive Abilities Test is intended to measure what has been called "fluid intelligence", that is, ability that is not bound by formal school instruction. The subtests (figure analogies, figure classification, and figure synthesis) emphasize discovery of, and flexibility in, manipulating relationships expressed in figure symbols or patterns. The Otis-Lennon Mental Ability Test is an intelligence or scholastic aptitude test which measures the student's facility in reasoning and in dealing abstractly with verbal, symbolic, and figural materials, and samples a broad range of cognitive abilities (e.g. classification, analogic reasoning).

Other measures have occasionally been used to measure cognitive functioning and creativity. For example, Bruck, Lambert, and Tucker (1974) used four different measures of divergent thinking: (a) Uses (e.g. Give as many uses for a shoe as you can); (b) Similarities (e.g. What are the similarities between a rug and a curtain?); (c) Lines (e.g. What could // be?); and (d) Patterns (e.g. What could ⎍

be?). They also used the Embedded Figures Test, in which students are asked to identify a simple form embedded in a more complex one.

5. How do children with below average IQ fare in an immersion program?

6. How do children with learning disabilities fare in an immersion program?

7. How do children from third language backgrounds fare in an immersion program?

Parents and educators have been concerned that immersion programs may place too heavy an educational burden on students with below average intelligence, a learning disability, or a third language background. Thus, questions 5, 6, and 7 essentially address the same questions asked in 1, 2, and 3 (and therefore the same kinds of tests have been used to answer them), but within the context of specific characteristics of individual students.

8. What are the social and psychological consequences of participation in immersion programs? This is a general question which reflects a number of more specific concerns. At one level, it concerns the possible difficulties students may have in adjusting emotionally to the immersion program. At another level, it concerns the possible outcomes of participation in immersion programs in terms of the students' social awareness and understanding of ethnic relations. These issues, and the means of examining them,

are discussed in Chapter 6.

Design of Research Undertaken by the Bilingual Education Project

In its evaluation of immersion programs, the Bilingual Education Project has focussed chiefly on the first four questions outlined above. In this section, the overall design of the research carried out by the Project is described in a general way. Complete details about the basis of sample selection, the tests used, and the analyses employed in any particular year or school board can be found in the relevant annual reports (see Appendix A).

Each spring a battery of tests was administered to students in the immersion programs. In the first year of the evaluation of any particular program, the initial group of students in the program (Cohort 1) was tested. In the second year of testing, the initial group of students was tested again, as well as the new group of students who began the immersion program that year (Cohort 2). In the third year of testing, the first two groups of students were tested again, along with the new group of students who began the immersion program that year (Cohort 3). Subsequently, these three groups of students were tested each year as they proceeded through their schooling. This is illustrated in Figure 3.1 for the cohorts tested in the first five years of the early total immersion program in the Ottawa and Carleton Boards of Education.

Figure 3.1

Grades and Cohorts Tested in the Annual Evaluations of the Early
Total Immersion Programs During the First Five
Years in the Ottawa and Carleton Boards of Education

	Year				
Cohort	1970-71	1971-72	1972-73	1973-74	1974-75
1	K →	1 →	2 →	3 →	4
2		K →	1 →	2 →	3
3			K →	1 →	2

The main reason for following three groups of students was to ensure that the initial results were not due to a "halo" effect. That is, because the students were in a new program that was receiving considerable attention, it was possible that the results might be somewhat "inflated". Where results from a second and third group are similar to the first, there is reason to feel confident that the program is producing stable results. Where the results associated with follow-up groups are not similar to those of the first group, or where the conditions of the program change, it may be important to test additional follow-up groups. Thus the original research design was modified in some instances in each program evaluation. For example, in Peel County, the initial groups of late immersion students studied French as a second language in daily 20- or 30-minute periods in grade 7 before entering grade 8 immersion. Later, the program was changed so that students began taking French in grade 6. It was therefore decided to test the sixth group of students entering grade 8 immersion in order to compare their performance with that of earlier cohorts. In the case of the early immersion programs in Ottawa and Carleton, on the other hand, the program results had been so consistent in the early grades that it was decided to test only the first and third groups of students in the 1978-79 academic year.

Not all students in an immersion program were necessarily tested, nor were the test results from all students necessarily included in the data analyses.

Generally speaking, where the program included a large number of students, sampling on a class basis occurred. In the elementary classes, the scores of those students who were judged by their teachers to have severe emotional problems, or who were repeating a grade, were not included in the data analysis. Nor were the scores obtained on French tests by students from French-speaking homes included in the analyses of the French language data.

In addition to the testing of immersion students each spring, classes of students in the regular English program at the same grade levels as the immersion classes were tested for comparison purposes. Care was taken to ensure that the students were generally comparable with respect to socio-economic status, based on information provided by personnel from each school board.

The number of students tested and included in the data analyses at each grade level in each year of testing for each program is given in Tables 3.2, 3.3, 3.4, and 3.5.

The average scores of the immersion students were compared with those of a suitable comparison group in the regular English program by means of an analysis of covariance, using IQ (and, where deemed appropriate, age) as covariates. IQ is generally positively associated with academic achievement, and if there were differences between the immersion and regular English program samples in IQ, any differences between the groups might be attributed to the differences in IQ. Although in choosing the samples, an attempt was made to ensure that the samples of students

Table 3.2

Number of Students Included in the Data Analyses in the Evaluation of the Early Immersion Program in the Carleton and Ottawa Boards of Education

Year	Cohort	Grade Level	Program	
			Immersion	Regular English
1970-71	1	K	204	151
1971-72	1	1	200	225
	2	K	275	325
1972-73	1	2	108	120
	2	1	160	170
	3	K	140	130
1973-74	1	3	173	206
	2	2	300	262
	3	1	265	250
1974-75	1	4	154	170
	2	3	263	229
	3	2	263	263
1975-76	1	5	92	117
	2	4	101	96
	3	3	110	88
1976-77	1	6	82	99
	2	5	91	104
	3	4	121	84
1977-78	1	7	90	99
	2	6	98	108
	3	5	145	69
1978-79	1	8	85	114
	3	6	184	93

Table 3.3

Number of Students Included in the Data Analyses in the Evaluation of the Early Immersion Program at Allenby P.S. (later at Glenview Sr. P.S.) in the Toronto Board of Education

			Program	
Year	Cohort	Grade Level	Immersion	Regular English
1971-72	1	K	49	47
1972-73	1	1	30	30
	2	K	24	24
1973-74	1	2	39	49
	2	1	33	42
	3	K	40	35
1974-75	1	3	36	55
	2	2	35	50
	3	1	41	42
1975-76	1	4	34	56
	2	3	30	54
	3	2	38	47
1976-77	1	5	33	25
	2	4	24	30
	3	3	37	35
1977-78	1	6	26	25
	2	5	21	24
	3	4	33	23
1978-79	1	7	23	24
	2	6	23	37
	3	5	29	41

Table 3.4

Number of Students Included in the Data Analyses in the Evaluation of the Early Partial Immersion Program in the Elgin County Board of Education

			Program	
Year	Cohort	Grade Level	Partial Immersion	Regular English
1971-72	2	1		
1972-73	1	3	21	24
	2	2	20	24
	3	1	27	21
1973-74	1	4	23	26
	2	3	24	18
	3	2	17	20
	4	1	18	19
1974-75	1	5	18	19
	2	4	15	18
	3	3	21	18
	4	2	19	24
1975-76	1	6	18	19
	2	5	15	18
	3	4	19	18
1976-77	1	7	16	27
	2	6	10	27
	3	5	11	21
1977-78	1	8	14	-
	2	7	8	-
	3	6	8	-
	6	3	21	-
1978-79	2	8	7	-
	3	7	8	-
	6	4	22	-

Table 3.5

Number of Students Included in the Data Analyses in the Evaluation of the Late Partial Immersion Program in the Peel County Board of Education

			Program	
Year	Cohort	Grade Level	Late Immersion	Core French
1971-72	1	8	55	54
1972-73	1	9	39	35
	2	8	54	60
1973-74	1	10	34	22
	2	9	41	30
	3	8	48	68
1974-75	1	11	30	26
	2	10	35	57
	3	9	36	30
1975-76	0	13	-	15
	1	12	19	22
	2	11	23	15
	3	10	20	15
1976-77	1	13	5	26
	2	12	8	5
	3	11	13	13
	4	10	47	45
	5	9	58	61
1977-78	2	13	6	8
	3	12	16	10
	4	11	10	-
	7	8	25	-
1978-79	4	12	14	21
	[illegible]	11	20	23
	6	10	20	24
	8	8	90	-

tested were similar with respect to socio-economic status (which tends to be correlated with IQ), it was impossible to preselect the samples on the basis of IQ. Therefore, analysis of covariance was used. Basically this statistical procedure makes adjustments to the scores obtained by students in relation to their measured IQ. Thus, an analysis of covariance, with IQ as the covariate, has the effect of making the groups equivalent in terms of IQ. In other words, the comparison of immersion and regular program students using covariance analysis is equivalent to preselecting the two groups on the basis of their similarity in IQ and then comparing their results.

Results are compared statistically. A significant difference indicates that the group averages are not the same, and the level of significance indicates the confidence one has in concluding that a real difference exists. A level of significance of .01, for example, means that, if the experiment were repeated, in only one case in one hundred would one expect to draw a different conclusion.

Some General Issues in Psychometric Research

In this section, some issues are discussed which must be faced by those undertaking the evaluation of any educational program, immersion or otherwise. The purpose of this section is to allow the reader to put psychometric research in its proper perspective, and, from this perspective, to judge the relative strengths and weaknesses of the results reported in the remaining chapters.

Psychometric research is, by definition, that which measures (quantifies) some aspect of individual performance. Thus, an overriding issue in any psychometric study is that aspects of behaviour which are non-quantifiable, or difficult to quantify, tend not to be considered. The other side of the coin is that those aspects of behaviour that are the easiest to quantify tend to be what is examined. This is the problem underlying many of the issues associated with the evaluation of educational programs, and it pervades the discussion here in terms of (a) the students tested, (b) the nature of the tests used, and (c) the methods of analysis employed.

The students tested. An evaluation of an educational program is typically set up with the following question in mind: "How do the students in the experimental program perform relative to how they would be doing if they were not in the program: that is, if they were receiving the 'traditional' or 'usual' form of education?" Alternatively, the question may be phrased: "How do the students in the experimental program perform relative to students receiving the usual form of education, or relative to students in another type of experimental program?" In other words, the research design in educational evaluations has typically involved the comparison of one group of students with another. However, the selection of an appropriate comparison group is often a contentious issue.

The main problem associated with the testing of students is in deciding which students to test. Educational research is rarely like "laboratory" research where the experimenter can randomly assign children to different groups -- in this case, to different educational programs. Instead, the students are "assigned" on the basis of numerous factors, which often operate outside the educational system, are not always readily identifiable, are often difficult to quantify, and rarely operate randomly in distributing students into educational programs.

What does this mean with respect to the students enrolled in French immersion programs? Because the programs are optional, this means that for the early immersion children, the parents make the decision whether to enrol their child in the French or English program; for the late immersion students, it is ultimately the students themselves who make the decision, with a little help from their friends, parents, and teachers.

Very little is known about the characteristics of students who enter a late immersion program except that typically they have obtained above-average grades in their core French course, and/or their friends have, and/or their parents think it is a good idea for them to learn more French. In other words, the only readily identifiable characteristic the late immersion student brings to the program is a motivation to continue to learn French.

Similarly, very little is known about the student entering early immersion. However, a few characteristics of the parents of the early immersion children are known. For example, when asked why they enrolled their child in the program, Ottawa French immersion parents frequently indicated that it was because they wanted their child to be bilingual. They did not seem concerned about whether the program would be too difficult for their child in that they rarely mentioned it as a worry. However, many parents who enrolled their child in the English program expressed concern that the French immersion program might be an upsetting or confusing experience and that the development of basic English skills might suffer. Several parents were certain that their child would not be able to cope in the French immersion program because of special learning or personality problems (Swain, Wesche, and Machin, 1972).

In considering the question of which students to test, it goes without saying that the students in the immersion program, or a sample thereof, are to be tested. The problems arise in selecting a control group. A control group is needed when the basic question is: "How do students in the immersion program perform relative to how they would be doing if they were receiving the usual form of education?" What is needed to answer this question is a group of students, similar in all respects to the immersion students except that they are enrolled in the regular English program. The preceding discussion should make it apparent that it is unlikely the French immersion students and the English program students will be similar in all respects.

If all the characteristics of the immersion group were identifiable and quantifiable, then presumably one could hunt through the population of students in the regular school program and perhaps find a group of students with equivalent characteristics. But the problem is just that -- the characteristics of the immersion group are not always readily identifiable nor quantifiable. For example, in the case of the primary level program, the fact that parents of the immersion children do not seem particularly concerned about their childrens' ability to cope with the immersion class may mean that the children in the program are brighter, or more extroverted, or more verbal, or simply more able to cope.

In sum, a major problem in evaluating educational programs is the selection of a control group. Typically a control group cannot be selected because: (a) the characteristics of the students in the experimental program are not always known; (b) the characteristics that are judged significant may be difficult to quantify; and (c) at least some of the characteristics may not be present among the students in the regular program.

This is a problem without a solution. However, the basic research question can be changed from "How do students in the immersion program perform relative to how they would be doing if they were receiving the usual form of education?" to "How do the students in the immersion program perform relative to students receiving the usual form of education?" Posing the question this way recognizes that students participating in the program have characteristics different from students not participating in the program, and that this is part of the very nature of the program. In other words, it assumes that the immersion program attracts students who, for example, in the case of late immersion students, are motivated to learn French, or, in the case of early immersion students, are more verbal, or able to cope.

In selecting such a comparison group, it is essential that every attempt be made to control variables known to affect achievement in school -- for example, socio-economic status and IQ. If the immersion program is attended by working-class children, then the comparison group should also consist of children from working-class homes.

Caution must be exercised in the interpretation of results when a comparison group is used. One cannot say that the bilingually educated students are doing as well as, or better or worse than they would be doing if they were being schooled in a regular English program; what one can say is that they are doing as well as, or better or worse than other students enrolled in the regular English program.

The nature of the tests used. The first question an evaluator must face is whether to use standardized tests or tests developed with the particular immersion curriculum and goals in mind. There are problems inherent in both approaches.

One advantage of standardized tests is that they are available. The development of a valid and reliable test is an extremely time-consuming process. From the construction of the first pool of test items to consultation with teachers in the program, to administration of the test, to revision of test items based on item analysis, to readministration, to final revision, to the obtaining of norms took the Bilingual Education Project a period of approximately four years. And during the period when the tests were being developed, they were also being used to measure student performance -- a somewhat unsatisfactory procedure.

One problem associated with the use of standardized tests is that some items may be inappropriate. For example, a number of items on achievement and IQ tests standardized in the United States include aspects of American life with which Canadian children may be unfamiliar. This problem becomes more severe the more culturally or linguistically different the group being tested is from the sample on whom the particular test was standardized.

Another problem associated with standardized tests is that they tend to maximize differences among students in a class while minimizing the differences among classes. As Macnamara (1974) points out, one reason for this is the choice of questions used in the test.

> Questions which deal with matters that have not been dealt with in all or nearly all classes are dropped straight away. Thus, standardized tests give little credit to the inventive or adventurous teacher or programme. (Macnamara, 1974, p. 51)

An alternative to giving standardized tests is to give tests developed with the curriculum and goals of the particular immersion program in mind. Done properly, this is a satisfactory procedure. But doing it properly is not always easy. The goals of a program rarely exist in a detailed written form. Developing a satisfactory test means getting agreement among program organizers, teachers, and consultants concerning the objectives of the program, and the appropriateness and relevancy of the test items to program goals and curriculum. Furthermore, if there are a great many classes in the program, then the problem that the standardized test developers face -- that of finding the common content -- is equally a problem here.

Perhaps the most serious problem with using locally developed tests is that it makes comparisons across alternative immersion programs difficult, if not impossible. For example, in the Ottawa area alone there exist several variations of the early immersion program depending on when the English Language Arts portion of the curriculum is introduced, what proportion of time is devoted to instruction in French, and the extent to which French is taught as a subject. Using the same test to measure French comprehension, for example, permits one to make comparisons across those variations. This is especially important when a program is being developed and variations within the same community context are being tried out, or when the same program is being tried out in different community contexts.

Because immersion programs have involved teaching a second language, their evaluations have, as we have seen, focussed largely on language-related skills. Achievement tests which measure word knowledge, spelling, punctuation, capitalization, grammar, and reading comprehension in both languages are the standard fare. These are pencil-and-paper tests which can be administered to a number of students simultaneously; they can be scored semi-automatically from answer keys or by computer. Tests which must be administered individually or which involve time and judgment in scoring (e.g. tests of creativity) are much less widely used. In other words, what is measured most frequently are those aspects of language that are easiest to measure. What is rarely measured are those aspects of language that are difficult to measure. They may be difficult to measure because they are not well enough understood for a relevant test to be developed, or because the collection and analysis of the data are simply too time-consuming.

In summary then, the problem with tests used in educational evaluations is three-fold: (a) Type -- standardized tests permit comparisons across programs but reference to test norms is inappropriate to the extent that the groups tested differ from the norming population. Standardized tests tend not to measure learning resulting from innovative curriculum practices. Tests developed specifically to measure the outcome of specific curricular inputs, although difficult to develop, are appropriate when group comparisons are not being made. When group comparisons are made, however, the results will obviously be biased in favour of the group receiving the specific curricular input. (b) Content -- the content measured in tests is limited. For example, language tests measure the skill aspects of language rather than the communicative, creative, or aesthetic aspects. (c) Utilization -- tests tend to be the only accepted means of obtaining performance data. Test data should be complemented by other data which may well be of a more subjective, non-quantifiable nature.

Methods of analysis. The basic research question in evaluating an immersion program is typically concerned with how the students in the immersion program are performing relative to students in the regular program. In addressing this question, analyses of variance and covariance, which permit the comparison of two or more groups of students on a single measure of performance, are the most commonly used methods of analysis. Analysis of covariance statistically adjusts for initial differences between the groups. Of course, the dimensions along which the groups differ initially must be identifiable and quantifiable in order to make use of these dimensions as covariates in the analysis; but as already noted above, it may be rare that the relevant dimensions are both identifiable and quantifiable.

In and of themselves, statistical comparisons are needed since they provide critical information about differences between groups. The problems associated with the use of statistics lie in their overuse, in the information that is lost, and in their potential misinterpretation by those unfamiliar with statistics and statistical significance. Statistical significance, it must be noted, cannot be equated with educational significance. The educational significance of a statistically significant difference is a matter of interpretation by parents, educators, and researchers.

In Chapter 3, reference was made to the concern of parents and educators involved in French immersion education that the English language skills of the students should develop normally in spite of the reduced exposure to English characterizing immersion programs. In this chapter, the results of English language testing in the three bilingual programs are presented. The question of French proficiency is then reviewed in some detail, with both quantitative and qualitative information on immersion students' second language skills and patterns of French language use.

Effects on English Language Skills

The English language, or first language, skills of early immersion students have been assessed by the Bilingual Education Project in a variety of ways. From repeated administrations of standardized tests like the Canadian Tests of Basic Skills (see Chapter 3 for test descriptions), a clear pattern of results has emerged. In Kindergarten through grade 3, immersion students lag behind their peers in the regular program in some aspects of English language skills. In grade 1, for example, immersion students' scores are lower on tests of word knowledge, word discrimination, and reading (see Table 4.1). This pattern of results persists through grades 2 and 3, where immersion students also fail to score as well as their regular program counterparts in more technical skills such as spelling, capitalization, and punctuation.

Such findings are not surprising, since no formal English language instruction is provided before grade 2, 3, or sometimes 4. By the end of grade 5, however, immersion children perform as well as, or better than, their English-educated peers on all aspects of English language skills measured by standardized tests. From grade 5 on, in those instances where there have been significant differences between immersion and comparison students, immersion groups have, with occasional isolated exceptions, outperformed their comparison groups in such areas as punctuation, spelling, vocabulary, and usage. This pattern of results is shown in Table 4.1, which presents the results for 38 separate administrations of the Canadian Tests of Basic Skills to students in Allenby Public School (Toronto Board of Education) and in the Ottawa and Carleton Boards of Education. All of the results of testing by the Bilingual Education Project cited in this chapter can be found in the annual evaluation reports listed in the appendix.

The apparent advantages in English experienced by early total immersion students in the middle and upper elementary grades can perhaps be explained by their knowledge of two different language systems, a knowledge which permits them to compare and contrast French and English and heightens their overall linguistic awareness (Cummins, 1979d; Lambert and Tucker, 1972). Lambert and Tucker point to "the early

Table 4.1

Summary of English Achievement Results
for Cohorts 1, 2 and 3
in Allenby P.S., Ottawa Board of Education and Carleton Board of Education
Early Total Immersion Program

		GRADE							
	Cohort	1	2	3	4	5	6	7	8
Allenby P.S.[1]	1	E word know ** word discrim *** reading **	E word analysis * spelling ***	E spelling *	ns	ns	ns	I vocab *	
	2	E word know ** word discrim ** reading ***	E word know * reading * total read * spelling ***	E spelling *	I vocab *** reading * spelling * punct * usage * lang total **	I vocab *	I usage *		
	3	E word discrim *	E spelling ***	E spelling * I vocab ** reading *** usage *	E capit *	I usage *			
OBE/CBE[2]	1	E word know *** word discrim *** reading ***	ns	E spelling *	ns	I vocab ** punct *** usage * lang total **	I spelling ** capit *** punct *** usage ** lang total ***	I spelling * punct * lang total *	I spelling ** lang total *
	2	E word know *** word discrim *** reading ***	E word know * read * total read * spelling ***	E word know ** total read * spelling ***	I vocab * usage * E capit *	ns	I punct * usage *** lang total **		
	3	E word know ** word discrim *** reading ***	E spelling *	E capit *** punct ** lang total **	ns	I punct ** usage * lang total *	I punct * usage ** lang total *		

Key

ns - no statistically significant difference between Immersion and English-taught students

I - Immersion students' average score significantly higher than average score of English-taught students: *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

E - English-taught students' average score significantly higher than average score of Immersion students: *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$

[1] based on data adjusted for IQ (1978, 1979) or for age and IQ (1971-77).

[2] based on data adjusted for IQ (1979 results), or age and IQ (1971-78 results).

development of a linguistic "detective" capacity: that is, an attentive, patient, inductive concern with words, meanings and linguistic realities" (1972:208). It seems clear from the pattern of test results that the early immersion students are able to transfer their reading skills acquired in French to their first language, they quickly become literate in English even though their exposure to formal instruction in English language arts is delayed until two or more years of schooling have passed.

The English language tests given by other researchers have also included measures of English listening and speaking skills. In the evaluations of the early total immersion program of the Protestant School Board of Greater Montreal, Genesee (1978d) reports on tests of vocabulary, word associations, listening comprehension, and storytelling for grades 1 to 3. He finds that the immersion students' performance on the tests, which do not require literacy skills, is for the most part equivalent to that of English control groups.

Qualitative analyses of immersion children's English speech and writing have been undertaken to complement the quantitative test results. In the context of the Bilingual Education Project, a detailed analysis was carried out of errors made by immersion and comparison groups on an English "fill-in-the-blanks" (cloze) test in which no important qualitative differences were found (Lapkin and Swain, 1977). Reporting on an oral storytelling task administered in grades 1 through 5 of an early total immersion program, Edwards and Smyth (1976a) note few differences in the creativity of the immersion students relative to that of their peers in the regular program. Immersion children interact effectively in conversation also: Genesee, Tucker, and Lambert (1975) have reported on a study conducted in Kindergarten and grades 1 and 2 which demonstrated that early total immersion students were more sensitive to the communication needs of listeners than their English-educated counterparts.

Two studies of immersion students' writing ability in English have been conducted by the Bilingual Education Project. In the first study, short stories written by early total immersion and regular program students in grade 3 were subjected to a detailed linguistic analysis (Swain, 1975). The analysis focussed on vocabulary knowledge, technical skills (punctuation, capitalization, and spelling), grammatical skills, and creativity as reflected in the types of stories written, the ability to write in logical chronological sequence, and the ability to write about events related to, but not depicted in, the picture that was provided to the students as a stimulus to the story. There were small differences between immersion and regular program students in all these areas, and the immersion students' performance was seen to compare favourably. The second study of English writing ability by the Bilingual Education Project involved global assessments of compositions written by grade 5 students in both program groups, the assessments being made by teachers who did not know the students or which program they were in. These "judges" found the compositions to be fully comparable. A further analysis of the variety in vocabulary use (for both nouns and verbs) and the relative length of compositions written by early total immersion and comparison students also showed no differences (Lapkin, 1979b).

Such studies demonstrate that the English language skills of the immersion students are similar to those of their unilingual peers in the regular program. This statement can be generalized beyond the research of the Bilingual Education Project; for example, Genesee and Stanley (1976) report similar findings from a study of the writing ability of both early and late immersion students. Genesee (1974c) reports on a study of the writing skills of grade 4 immersion students. Based on teacher ratings, the immersion group lagged behind non-immersion students in spelling, but their stories were considered more original. Ratings were comparable for sentence accuracy, vocabulary choice, sentence complexity and variety, and organization. Using a more extensive measure designed to test eleven objectives of the English language arts program in New Brunswick, Grobe (n.d.) found that grade 5 early immersion students scored as well as, or better than, their English program counterparts.

One further indication that the English language skills of early immersion students are unlikely to suffer ill effects comes from immersion parents. A parent survey conducted in British Columbia by McEachern (1980) shows that immersion parents feel that the English language skills of their children are unlikely to suffer in the program. In Ontario, a parent questionnaire distributed in the Hamilton Board of Education (1981) included a question about the students' ability to express thoughts in English: an overwhelming majority of parents (91%) indicated that they perceived no negative effects.

Turning to the partial immersion program offered in Elgin County, it might be expected that given the greater proportion of time devoted to English from the beginning of the program, there would be no tendency for partial immersion students to lag behind their English program peers in the early years of schooling. In fact, the English test results of the partial immersion students are similar to those of total immersion students: they tend to lag behind their English program counterparts until the end of grade 3 or 4. However, unlike the total immersion students who outperform comparison students in several aspects of English language skills at grade 5 or above, partial immersion students keep pace with, but do not surpass, their comparison groups.

A recent study published by Edwards, McCarrey, and Fu (1980) on the bilingual program in the Ottawa Roman Catholic Separate School Board reports on the English language skills of partial immersion students at grades 3, 4, and 5. Generally speaking, the English language results parallel those recorded for previous cohorts of total immersion students in the same board. In other words, partial immersion students perform in English as well as, or better than, their regular program peers.

In the Peel County late partial immersion study, a tendency to lag behind regular English program students in English reading comprehension was noted in the first year of the program for the first group of late immersion students only (Cohort 1, who entered the program in 1971). This deficit disappeared by the end of grade 9. Not all subsequent late immersion cohorts were tested in English in grade 9, in part because Cohorts 2 and 3 did not exhibit the same lag.

Results from evaluations of other late immersion programs are similar; for example, Genesee, Polich, and Stanley (1977) note no differences in English skills measured by standardized tests between late immersion and comparison students at the end of the first year of the program. (This immersion program operates in the Protestant School Board of Greater Montreal; it begins in grade 7 with approximately 85% of the instructional time through the medium of French, followed by up to 40% of the curriculum available in French, at grades 8 through 11.) Writing skills were also assessed at grades 7 and 11 and were found to be comparable or superior to those of regular English program students (Genesee and Stanley, 1976).

In summarizing the English language results from the three immersion programs reviewed, it is important to point out that although there are temporary lags in some groups (especially in early total immersion), the long-term trend is for immersion groups to perform as well as, or better than, comparison groups on both standardized and non-standardized tasks. One of the challenges that lies ahead for educators and researchers is to uncover the reasons for the benefits in the area of first language development that appear to accrue to students who have spent several years in the early total immersion program.

Effects on French Language Skills

In the discussion on French language skills, the French test results associated with each of the three immersion programs will first be summarized; the programs will then be compared in terms of the second language outcomes they achieve. A third section deals with descriptive studies of the French language abilities of immersion students. This is followed by an overview of the students' own perceptions of their French language skills, and a section on the perceptions of French native-speakers about the abilities of immersion students. Finally, information on the patterns of French language use by immersion students is provided.

Early total immersion French test results.

In the initial years of the evaluations of early total immersion programs, the French skills of immersion students were most often assessed in relation to those of students in core French programs: that is, programs in which French as a second language instruction is provided in daily 20- to 40-minute periods. Since the development of listening skills is stressed in the early years, listening comprehension tests were administered from Kindergarten up to the end of grade 3. It was soon apparent that the tests were too difficult for core French students, whereas immersion students were obtaining near-perfect scores by grade 3. The French scores of the immersion students would be more usefully interpreted, it was felt, if they were considered in relation to the French language skills of native French-speaking students of the same age and grade level. This belief was reinforced by the results of administering standardized tests designed for francophone students in Quebec; even by grade 1 or 2, the immersion students were scoring as well as about one-third of native French-speaking students in Montreal, and by grade 6, as well as one-half of the Montreal comparison group.

Communicative tests of French reading and listening comprehension have also been administered at the upper elementary grade levels (grades 5 through 8). The use of such tests as the _Test de compréhension auditive_ and the _Test de compréhension de l'écrit_, along with the _Test de mots à trouver_ (see Chapter 3), has made it possible to document the steady progress of early total immersion students to near-native levels of proficiency in several aspects of French language skills by the end of grade 8. Some specific scores on two of these tests are presented in Table 4.2. The scores of the early immersion students have not been compared statistically to those of the bilingual francophone students tested in the Ottawa Roman Catholic

Table 4.2

French Achievement Results of Grade 8 Early Total Immersion Students in the Ottawa and Carleton Boards of Education (Cohort 3) and of a Bilingual Francophone Comparison Group*

	Immersion	Francophone
Test de compréhension auditive, niveau B (max = 22)	15.0	14.5
Test de mots à trouver, niveau D (max = 41)	19.9	19.6

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[*] The scores shown are group averages.

Separate School Board (Edwards, Colletta, Fu, and McCarrey, 1979a). Caution must be exercised in making comparisons because of possible IQ, socio-economic, and other differences between the groups. Within these limitations, the results shown in Table 4.2 suggest that grade 8 early immersion students achieve native-like performance on the two French tests for which francophone data are available.

One further point should be made about the French language achievement of the early total immersion students. Two alternative settings for such programs have been studied: immersion centres, where only the immersion program is housed in a given school; and dual-track schools, in which the immersion and regular English programs co-exist (Lapkin et al., 1981). It was found that the French language skills of the immersion students were enhanced by studying in immersion centres where a greater amount of French is used in the wider school environment beyond the classroom. The scores of those grade 5 immersion students studying in immersion centres were significantly higher on two French tests (listening and reading comprehension) than those of immersion students in dual-track schools. The conclusions of the study underlined the desirability of providing a school environment which includes as much French as possible (e.g. school announcements and assemblies in French).

Early partial immersion French test results. The Elgin County partial immersion students' performance on French tests has been compared both to that of core French students in other boards where core French is provided from

Kindergarten on, and to that of total immersion students. In general, by grade 8, the partial immersion students tend to perform as well as total immersion students one grade level below them. Table 4.3 presents Elgin County grade 8 French scores on two tests and some comparison scores from early total immersion programs at grades 7 and 8. On the Test de compréhension auditive, the Elgin County results in grade 8 are similar to those of grade 7 early total immersion students in Toronto (Allenby Public School graduates who transfer to Glenview Senior School at grade 7). On both tests the partial immersion students' scores are below those of grade 8 total immersion students. As would be expected, the partial immersion students outperform core French students at any particular grade level.

It is useful to examine test results for the most advanced grade level (grade 5) of the partial immersion program operating in the Ottawa Roman Catholic Separate School Board (Edwards, McCarrey, and Fu, 1980). On a reading comprehension test normed on a grade 4 total immersion population across Canada, grade 5 partial immersion students scored at the 21st percentile. Elgin County grade 4 students had scored at the 23rd percentile. These results suggest that in reading comprehension, by grade 4 or 5, partial immersion students do as well as the bottom quarter of the total immersion groups. Edwards also reports grade 5 results for the Test de rendement en français, where partial immersion students score in the third stanine, as compared with total immersion students tested by Edwards and

Table 4.3

French Achievement Results of Grade 8 Early Partial Immersion Students Students in the Elgin County Board of Education (Cohort 1) and of Early Total Immersion Students at Grades 7 and 8*

	Early Partial Immersion Elgin County, Grade 8	Early Total Immersion Toronto, Grade 7 (Cohort 1)	Early Total Immersion OBE/CBE, Grade 8 (Cohort 1)
Test de compréhension auditive, niveau B (max = 22)	13.00	13.68	14.95
Test de mots à trouver, niveau D (max = 41)	17.86	-	19.90

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* The scores shown are group averages.

ourselves whose scores generally fall in the fourth, and sometimes the fifth, stanine.

Late immersion French test results. The second language skills of late immersion students have been compared both to those of their core French counterparts, and in more recent evaluations, to those of early French immersion students and francophones, where data are available. The results of French tests administered at grade 8 in Peel County (i.e. after the first year of the late immersion program) indicate that immersion students perform significantly better in all aspects of French than grade 8 core French students. Moreover, the French listening and reading comprehension scores are comparable to those of core French students who are two to three grade levels ahead of them, in grades 10 or 11 (see also Shapson and Kaufman, 1978b). In the 1979 evaluation, for example, in French reading comprehension, listening comprehension, and on a French cloze test, the immersion students' scores were significantly higher than those of core French students at grades 10, 11, and 12. This has not always been the case: in earlier annual evaluations (based on different tests of listening and reading comprehension), by grade 12, core French students had caught up in the area of reading comprehension, although not in listening comprehension. One possible explanation is that at grade 12, late immersion students have often been mixed together with core French students in the same classes; this may have had the effect of enhancing the skills of the core French students.

In recent evaluations, the results obtained by Peel County late immersion students have been considered in relation to those obtained by early French immersion students in other boards. (There is an early total immersion program in Peel County, but its students have not yet reached grade 8.) Two French tests were administered to grade 8 students in the Peel County late immersion program and in the early immersion programs of the Carleton and Ottawa Boards of Education. They were also given to the late-extended students in the Toronto Board of Education (at Glenview Senior Public School). The results for the Peel County late immersion and Toronto late-extended students, presented in Table 4.4, have been compared and their scores on the two French tests do not differ statistically. It is clear, however, that the late immersion students (in both programs) obtain scores well below those of the two early immersion comparison groups (both total and partial) on these tests.

These results are consistent with findings reported by the Research Centre of the Ottawa Board of Education (Morrison et al., 1979) which show that, in the Ottawa and Carleton Boards of Education, early immersion students outperform late immersion students at grade 8 in French listening comprehension, reading comprehension, general French achievement (as measured by the Test de rendement en français), and on a French cloze test. It is important to note that the late immersion students tested in Ottawa have had more exposure to French than the Peel County students,

Table 4.4

French Achievement Results of Grade 8 Late Partial Immersion Students in the Peel County Board of Education (Cohort 8) and of Other Immersion Program Groups*

	Late Partial Immersion Peel County, Grade 8	Late Extended French Toronto, Grade 8	Early Partial Immersion Elgin County, Grade 8 (Cohort 1)	Early Total Immersion OBE/CBE, Grade 8 (Cohort 1)
Test de compréhension auditive, niveau B (max = 22)	8.82	10.54	13.00	14.95
Test de mots à trouver, niveau D (max = 41)	13.60	13.96	17.86	19.90

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* The scores shown are group averages.

since in both the Carleton and Ottawa Boards of Education, core French instruction begins at Kindergarten, and students enter late immersion at either grade 6 (Ottawa) or grade 7 (Carleton). Brief program descriptions are presented in Table 4.7.

There is a high degree of similarity between the latter programs (in Ottawa) and late immersion programs in Montreal (specifically, in the Protestant School Board of Greater Montreal) evaluated by Genesee (1979d), Adiv and Morcos (1979), and Adiv (1980c). The most recent Montreal reports concern the relative performance of early and late immersion students at grades 10 and 11. Measures of French listening comprehension, reading comprehension, written composition, oral production, and a cloze test revealed few differences between the late immersion group who had had intensive exposure to French in grades 7 and 8 (80%+) and the early total immersion students who, in that board, are in a post-immersion follow-up program from grade 4 on, with 40% of their curriculum in French in grades 4 to 11. Among the factors which may explain the similarity in performance of early and late immersion groups from the end of grade 8 onwards, two suggested by the researchers conducting the study are particularly interesting. First, the post-immersion program of the early immersion students may be inadequate to maintain and foster further second language development beyond grade 4 (where only 40% of instructional time is provided in French). Second, the late immersion group may benefit from the more intense exposure to French (over 80% at grades 7 and 8) in their recent past.

These results from Montreal might be expected to provide a preview of possible outcomes in Ontario, once we are in a position to assess both programs towards the end of secondary school. However, in Ontario, early total immersion programs tend to maintain a higher intensity of exposure to French from grade 4 on than does the Montreal program described above (see Figure 2.1), with at least 50% of the curriculum taught in French from grades 4 to 8 (with the exception of one grade only at Allenby Public School). In other words, the Ontario and Montreal programs are sufficiently different from each other that it is not possible to predict whether comparisons of early and late immersion made in Ontario several years from now (at grade 12, for example) will yield similar results.

The issue of optimal program design is an important one. Consider, for example, the results from French testing at the secondary school level within the Peel County Board of Education presented in Table 4.5. A statistical comparison of test scores indicates that, although late immersion students make statistically significant progress from grade 8 (their first immersion year) to grade 10, no significant gains are made from grade 10 to 11, or grade 11 to 12. This implies that the immersion follow-up program at the secondary grades, and specifically after grade 10, is adequate to maintain the students' French language skills, but not to enhance their performance in the second language.

Table 4.5

French Achievement Results Across Grades in the Peel County Late Partial French Immersion Program*

	Grade 8 (Cohort 8)	Grade 10 (Cohort 6)	Grade 11 (Cohort 5)	Grade 12 (Cohort 4)
Test de compréhension auditive, niveau B (max = 22)	8.82	12.00	14.29	14.50
Test de mots à trouver, niveau D (niveau = 41)	13.60	20.37	22.00	21.89

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* The scores shown are group averages.

How do the scores of secondary school late immersion students compare to those of native French-speaking students? The Bilingual Education Project was able to administer the Test de compréhension auditive to a bilingual francophone class in the Carleton Board of Education at grade 10 and to another class at grade 12. The results, presented in Table 4.6, indicate that the bilingual francophone students obtain scores which are well above those obtained by the late immersion students. By grade 12, then, late immersion students do not appear to have reached native-like levels of performance in listening comprehension.

Comparing across programs at grade 8. The programs used for comparison purposes by the Bilingual Education Project are described briefly in Table 4.7. Based on scores presented in the discussion of the three main program alternatives reviewed above (and in Tables 4.2 to 4.6), the following summary statements can be made:

a. At grade 8, early immersion students' scores on two tests administered in common are similar to scores obtained by bilingual francophone students.

b. At grade 8, the scores obtained by late immersion groups on both tests are significantly lower than those obtained by early immersion groups. The late immersion scores also appear significantly lower than those of early partial immersion students.

c. By grade 8, Elgin County partial immersion students obtain listening comprehension scores which are similar to

Table 4.6

French Listening Comprehension Scores Obtained by Secondary School Late Partial French Immersion Students and by Bilingual Francophone Students at Grades 10 and 12*

Program	Grade 10	Grade 12
Late Partial Immersion	12.00	14.50
Bilingual Francophone	18.80	17.96

* The test used was the *Test de compréhension auditive, niveau B* (max = 22). The scores shown are group averages.

Table 4.7

French Immersion in Ontario: A Description of Some Programs to Grade 8

Program	Board of Education	Board Terminology	Grade Program Begins	Description	Accumulated Hours of French at End of Grade 8
LATE IMMERSION	Peel County	Late Partial Immersion	8	Grade 6 - core French (30 minutes daily) Grade 7 - core French (20 minutes daily) Grade 8 - 55%-70% of curriculum in French	625 - 780
	Toronto	Late Extended	7	Students have varying core French backgrounds prior to entering programs and have accumulated from 90 - 315 hours of core French instruction to end of grade 6 Grade 7 - 25%-30% French Grade 8 - 40% French	700 - 870
	Ottawa	Late-Entry Immersion	6	K - grade 5 - core French (20 minutes daily) Grade 6 - 100% French Grade 7 - 50% French Grade 8 - 50% French	2145
	Carleton	Late-Entry Immersion	7	K - grade 6 - core French (20 minutes daily) Grade 7 - 80% French Grade 8 - 80% French	1845
EARLY PARTIAL IMMERSION	Elgin County	Early Partial Immersion	1	Grades 1 to 8 - 50% French	3330
EARLY TOTAL IMMERSION	Ottawa, Carleton	Early Immersion	K	K to grade 1 - 100% French Grades 2 to 4 - 80% French Grades 5 - 65-80% French Grades 6 to 8 - 50% French	4450 - 4985

those obtained by grade 7 early total immersion students and slightly below those of grade 8 early total immersion students. There are so few students in the partial immersion group that these statements must be considered as tentative. On the French cloze test, grade 8 partial immersion students' scores are also a little lower than those of grade 8 early immersion and bilingual francophone students.

Descriptive linguistic accounts of immersion students' second language abilities. Linguistic analysis is both time-consuming and expensive. At the same time it is rewarding, in that it provides descriptive accounts that can help define objectives for various French programs and can furnish feedback to teachers and consultants who are concerned with curriculum development and syllabus design. Several major studies have been undertaken by the Bilingual Education Project along these lines, all relating to early total immersion students.

Two of these studies have been mentioned already in the discussion of the first language abilities of immersion students. Swain (1975) analysed both English and French stories written by grade 3 immersion students. Comparing the French stories of the early immersion students to their English stories, she found the French stories to be shorter but equally varied in the use of vocabulary items (except prepositions); there were more grammatical errors and fewer "technical" errors (in punctuation and capitalization), and more spelling errors. Immersion students' stories tended to be more descriptive in French than in English. It would be interesting to compare their stories to those written by francophone peers. Swain concluded that more time and energy should be directed towards improving students' writing in French, since their English writing skills were developing normally.

In the error analysis of grade 5 early immersion responses on a French cloze test (Lapkin and Swain, 1977), the comparison groups were composed of bilingual and unilingual French-speaking students at the same grade level. The immersion students made considerably more errors than the unilingual francophone students, although at least some of the errors made frequently by the early immersion students were identical to those made by the unilingual French speakers. The errors made by the immersion and bilingual francophone students were qualitatively similar, suggesting that those two bilingual groups were using similar strategies in completing the cloze passage. Once again, these comparative statements must be treated cautiously, since little information was available on the socio-economic background or IQ of the francophone groups.

Two studies of the early total immersion students' speech have been conducted. The first (Harley and Swain, 1977, 1978a) involved interviewing five randomly selected grade 5 immersion students, three bilingual grade 5 children of French-speaking home background attending a francophone school, and three unilingual French-speaking children from Quebec City. The interviews, which were conducted by a French-speaking adult who was not known to the children, were designed to elicit information on the verb system of the students. Among other things, the children were asked to narrate past experiences, explain current activities, and talk about the future: that is, they were expected to produce a variety of verb forms to realize specific semantic functions. The detailed linguistic analysis of the interviews shows that the verb system used by the immersion students was simplified relative to that of the six comparison students. For example, immersion students were generally unable to produce conditional forms in French in response to such questions as: "Qu´est-ce que tu ferais si tu gagnais la loterie nationale?" Instead, the future might be used, thus removing the "hypothetical" nuance inherent in the conditional; or an adverb was used to convey tentativeness ("Je peut-être acheter une voiture"). Thus immersion students are able to convey the essential message, but may use an inappropriate grammatical form to do so. The authors of the study point out that there may be little need for the immersion students to acquire a completely native-like command of French: "Once the children have reached a point in their language development where they can make themselves understood to their teacher and classmates (as they clearly have), there is no strong social incentive to develop further towards native speaker norms" (Harley and Swain, 1978a:38).

It is important to bear in mind that the only native model in an immersion classroom is the teacher and that sustained interaction with francophone peers should be encouraged if the immersion children are to attain native-like speaking abilities (Swain, 1978c). In another study by Szamosi, Swain, and Lapkin (1979) recordings were made of the conversations of a small sample of grade 2 immersion pupils who, on an individual basis, spent some time (once a week for two months) playing in the French-speaking homes of grade 2 pupils who were attending a francophone school. A number of the play sessions were then transcribed and analysed. The analysis was done in "functional" terms: that is, the purpose was to see how well grade 2 immersion students could use their spoken French in a natural context. It was found that the immersion students interacted with ease and naturalness and could joke, ask for clarification, issue orders, respond appropriately to the French-speaking playmate, and so on. The results of this study, along with those of the Harley and Swain (1978a) study, suggest that early immersion students can convey a rich range of meanings in French, but that their way of doing so remains non-native.

The linguistic outcomes of early partial and late immersion programs have received less descriptive research attention. In one study, however, Morrison et al. (1979) compared grade 8 early total and late partial immersion French compositions and found that the early immersion students wrote longer sentences with fewer errors, although the average length of the compositions was similar for the two groups.

In an interview study conducted in Peel County at the grade 12 level, the conversational French skills of late immersion students were compared to those of core French students (Swain and Lapkin, 1977). The interview data suggest that the late immersion students were better able to cope with the communicative demands of conversing in French.

Students' perceptions of their French language abilities. The Second Language Student Survey was administered to early total and late immersion students in the 1979 annual evaluations conducted by the Bilingual Education Project. Four questions of the Survey were grouped under one factor because they related to the students' self-assessment of their skills. Students were asked how well they felt they could understand French TV programs and newspapers or magazines; they were also asked how well they could make themselves understood in a conversation with a stranger, and were requested to assess the extent of their willingness to engage in French conversation outside the school context. A second relevant factor, grouping five related questions, dealt with the students' expressed preferences vis-à-vis their French program; for example, would they prefer to spend more, or less, or the same amount of time learning in French at school? On both factors, the early immersion students scored higher: they considered themselves more skilled in French than the late immersion students did and would prefer to have more French in their school program.

In the St. Lambert study (Lambert and Tucker, 1972) the views of early total immersion students in grades 4 and 5 were contrasted with those of students in the regular English program taking core French. At both grade levels, a large percentage of early immersion students (from 36% to 70%, depending on the skill area) felt that they spoke, understood, read, and wrote French as well as they did English. A second study (Genesee, 1978f) documented the views of grade 6 early and grade 11 late immersion students in the Protestant School Board of Greater Montreal on their program and their self-assessment of their French skills. The self-reports of all the immersion students corresponded to trends already noticeable in their test results, with both groups rating their listening comprehension skills as their strongest second language ability and their oral production skills their weakest. Both groups of immersion students were well satisfied with their programs; no differences were apparent between early and late immersion students.

Native speakers' perceptions of immersion students' French language skills. One of the undisputed objectives of immersion programs is that its products, the students, be able to communicate effectively in French with native-speakers. Lepicq (1980) conducted the first empirical study of the acceptability of immersion students' speech to bilingual and unilingual French peers and adults. The study involved presenting recorded speech samples from interviews with eight grade 6 Ontario immersion students and four unilingual French-speaking Quebec students to a group of judges. The researcher interviewed the 96 judges (bilingual and unilingual, students and adults), to elicit views on the acceptability of the speech samples. The judges tended to apply different criteria in evaluating the immersion and francophone comparison students, demonstrating that their expectations were different for the two groups. In general, the immersion students were assessed favourably, and Lepicq (1980:592) suggests that early immersion programs "constituent une préparation tout à fait adéquate à la communication éventuelle entre les apprenants et les francophones de naissance".

Immersion students' patterns of French language use. A number of questions on the Second Language Student Survey used in the evaluations of the Bilingual Education Project have been related to three important factors in developing French proficiency: the students' self-motivated use of French, their opportunity to use French, and the use of French in the home. In considering the first of these, it is noteworthy that the students report very little self-initiated use of the language (e.g. reading French magazines or newspapers, listening to French radio, watching French television, using French on vacations). This lack of self-initiated language use seems to characterize findings from similar questionnaires used in other evaluations. In a study already referred to, Genesee (1978f:38) reports:

> ...it does not seem that they [immersion students] are more active in initiating conversations in French or in actively seeking out situations where French could be used ... there was no evidence that they use French more outside school than do their peers in the regular program.

As one illustration of this tendency not to seek out opportunities for using French, immersion and non-immersion students alike indicated minimal use of French media (including television, radio, cinema, books, magazines, and newspapers). At both grades 6 and 11, however, immersion students indicated that they were more likely than comparison students in the regular program to respond in French if spoken to in French. This pattern of questionnaire responses suggests a distinction between "active" and "reactive" language use, with active referring to French language use in conjunction with the media, and reactive to French language use in interpersonal communication. Genesee (1980b:20) concludes "that the favourable attitudes of the immersion children and their parents along with their superior second language competence were sufficient to engage them in reactive language use but not in active language use".

What about the immersion students' opportunity to use French? Here there is a significant difference between early and late immersion students tested by the Bilingual Education Project (Lapkin et al., 1980), with early immersion students reporting more opportunities to use French outside of school. In school, the early immersion students report that they use French in class with their teacher almost all the time, differing significantly from the late immersion students who report using French with their teacher about half the time.

Learning French and IQ. Is there a relationship between academic ability as measured by standardized IQ tests and the ability to learn French in an immersion context? In summarizing several relevant studies of early immersion students (from Kindergarten through grade 9), Genesee (1976c) states that the acquisition of literacy skills in French is associated with the students' IQ level, while the acquisition of interpersonal communication skills is not. Furthermore, he specifies that "Below average students in total early immersion acquire functional competence in speaking and understanding French to the same extent as average and above average students in the program" (p.23). In discussing children with specific learning disabilities, behaviour problems, and other difficulties, Bruck (1979b) concludes that such students progress as well in an early immersion program as they would in a regular English program and that the immersion program provides "a particularly appropriate environment for many 'slow learners' or 'learning disabled children' to learn French" (p. 46).

Summary of French Language Findings

The receptive skills (French listening and reading comprehension) of the French immersion students appear to develop to near native-like levels by grade 8 of an early total immersion program. French speaking and writing skills, however, remain less native-like, although immersion students are able to convey the meaning of what they want to say. Based on results from a listening comprehension test, there is some indication that early total immersion students' performance (at grade 8) is closer to that of bilingual francophone peers than is the performance of late immersion students (at grade 12). In addition, the Ontario results show that the performance of grade 8 early immersion students in all skill areas tested is superior to that of late immersion students in grade 8 who have had one, two, or three years of intensive exposure to French.

It is important that comparisons of the second language outcomes of early and late immersion programs continue to be carried out at higher grade levels (e.g. in two years' time, when both groups have reached grade 12 in Ontario), and that improved measures of the productive skills (especially speaking) be developed and used to describe the French language proficiency of different immersion groups at that advanced stage. Similarly, it is important to make systematic comparisons with the French language skills of bilingual francophones, since attaining a similar degree of French proficiency constitutes a desirable objective for immersion programs.

Immersion students have a high level of confidence about their own second language abilities, and recognize that their speaking skills are the weakest area. Nonetheless, native French speakers assess immersion students' speech favourably. If immersion students can be encouraged to pursue actively opportunities for French language use outside of school, and if educators can be persuaded to provide as intensive an exposure as possible to French in school, the second language skills of immersion students in all programs can be expected to be even better.

5 Academic Outcomes of Immersion Education

As indicated in Chapter 3, one of the major concerns of parents and educators about immersion education was whether immersion students would be able to keep up with their English-educated peers in subject content taught to them in French. Associated in part with this concern was the more general question of whether a child's intellectual growth might be impeded as a result of attempting to process information in more than one language. A further worry was that the immersion students might develop poor work-study habits because of restlessness and inattentiveness that could result if the students were not able to understand what was being said to them. These issues are the focus of the present chapter.

A considerable amount of information has been gathered in Ontario and elsewhere in Canada addressing these issues. For example, virtually every evaluation undertaken of an immersion program has measured the students' achievement in mathematics, comparing the immersion results against national norms, or against similar students studying mathematics in English in the same school or school board. Perhaps what is most remarkable about the findings on these issues is the consistency of what the data reveal. The data collected in the context of the Bilingual Education Project at OISE and discussed in the following pages, therefore, serve to illustrate the results now widely confirmed for immersion programs across Canada.

In this chapter, a section on early total immersion programs is followed by sections on early partial immersion programs and late immersion programs. The definition and descriptions of each program are found in Chapter 2. The results of the Bilingual Education Project which are summarized in this chapter are drawn from the annual reports listed in the appendix.

Early Total Immersion

Students in early total immersion programs are initially taught all content material in French. At later grade levels when the proportion of the curriculum taught in English is increased, some subjects are taught in English. The choice of subjects taught in English or French has tended to be made on the basis of available teaching expertise and other administrative constraints within a school. When a choice unconfined by administrative constraints can be made among subjects to be taught in French, at least two factors need to be kept in mind: (a) student achievement in the subject content depending on language of instruction, and (b) the usefulness of the subject content in advancing French language proficiency. A subject which allows considerable opportunity for students to hear and use the second language in rich and creative ways seems most appropriate.

In the early years of schooling, the primary focus of the curriculum is on language arts and mathematics, and it is for these subjects that standardized tests are available for measuring achievement. At later grade levels when science becomes another major curriculum focus, this is reflected in standardized achievement tests as well. For other subjects such as social studies (history and geography) where the sequencing of content, as well as the content itself, is more flexible, locally developed tests based on school board curricula are more appropriate to use for measuring achievement. Because arithmetic/mathematics is always taught in French in the primary grades of total immersion, and because standardized tests (in English and French) are available to measure achievement in this subject, the most extensive information is available about achievement in mathematics when it is taught through the medium of the second language.

The research available on subject matter achievement has addressed two questions:

1. Are immersion students able to keep up with their English-educated peer group in subjects taught to them in French?
2. Are achievement scores affected by the language of the test?

The first question has been approached within the context of the Bilingual Education Project by testing the mathematics and science achievement of immersion and English-program students in the same school or school board, and comparing the results statistically (see Chapter 3). The mathematics and science tests were given in English, even though immersion students had been taught these subjects in French. The results for mathematics are shown in Table 5.1 and for science in Table 5.2.

Table 5.1 gives the results for 38 separate administrations of standardized mathematics achievement tests to students in Allenby Public School in Toronto and in the Ottawa and Carleton Boards of Education in Ottawa. (The numbers of students tested for each cohort and grade level are given in Table 3.2.) In the majority of comparisons between immersion students and their English-educated peers, their average scores are equivalent: that is, there are no statistically significant differences between the groups on the test as a whole, or on any of the subtests dealing with mathematics concepts or problem solving. In three instances, an English-taught group scored significantly higher than an immersion group on one or two of the subtests, but never on the test as a whole. However, in six instances, an immersion group scored significantly higher than its comparison group on one or two of the subtests. Additionally, in four of these cases, the immersion students demonstrated superior performance on the mathematics test as a whole. The overall picture emerging from these comparisons is that immersion students are able to keep up in mathematics with their English-educated peers of similar IQ level and socio-economic background. They are able to learn mathematics in French and transfer the knowledge acquired in a French context to an English one. There is no indication over the long run of any detrimental effects resulting from

Table 5.1

Summary of Mathematics Achievement Results
for Cohorts 1, 2 and 3
in Allenby P.S., Ottawa Board of Education and Carleton Board of Education
Early Total Immersion Program

		GRADE							
	Cohort	1	2	3	4	5	6	7	8
Allenby P.S.[1]	1	ns	ns	ns	ns	ns	ns	E concepts *	
	2	ns	ns	ns	I concepts ** prob solving * math total **	I concepts * prob solving ** math total **	ns		
	3	I arith total **	ns	I concepts *** prob solving** math total ***	ns	ns			
OBE/CBE[2]	1	ns	ns	E prob solving *	ns	ns	ns	ns	ns
	2	ns	ns	E concepts * prob solving *	ns	ns	ns		
	3	I computation ***	ns	ns	ns	I prob solving *	ns		

Key

ns - no statistically significant difference between Immersion and English-taught students

I - Immersion students' average score significantly higher than average score of English-taught students: *p ≤ .05 **p ≤ .01 ***p ≤ .001

E - English-taught students' average score significantly higher than average score of Immersion students: *p ≤ .05 **p ≤ .01 ***p ≤ .001

[1] based on data adjusted for IQ (1978, 1979) or for age and IQ (1971-77)

[2] based on data adjusted for IQ (1979 results), or age and IQ (1971-78 results)

being taught mathematics in French. Similar conclusions are evident from the evaluations of other early total immersion programs (e.g. City of Hamilton Board of Education, 1979; Edwards and Smyth, 1976a; Edwards, Colletta, Fu, and McCarrey, 1979a; Gray, 1980; Lambert and Tucker, 1972; Wolsk, 1977).

The conclusions with respect to science achievement in the early total immersion program are similar. The results from the Bilingual Education Project's study are shown in Table 5.2, where it can be seen that the average scores of the immersion students and their English-taught peers are equivalent in fourteen separate administrations of standardized science achievement tests from grades 5 to 8. One exception occurs in grade 6 where the immersion students outperform their English-educated comparison group. These findings are similar to other studies which have examined science achievement (e.g. Bruck, Lambert, and Tucker, 1976a; Edwards, Colletta, Fu, and McCarrey, 1979a), indicating that science achievement is neither positively nor negatively affected by instruction in the second language.

The comparison of students across programs within a school or school board reflects only the relative standing of each group. It does not indicate the actual scores obtained by the immersion students. In the data collected by the Bilingual Education Project, the scores of the immersion students were typically above their expected grade equivalents. Table 5.3 illustrates this for mathematics achievement for grades 3 to 6 of Cohort 2. Although the

Table 5.2

Summary of Science Achievement Results
for Cohorts 1, 2 and 3
in Allenby P.S., Ottawa Board of Education and Carleton Board of Education
Early Total Immersion Program

		GRADE			
	Cohort	5	6	7	8
Allenby P.S.[1]	1	ns	I **	ns	
	2	ns	ns		
	3	ns			
OBE/CBE[2]	1	ns	ns	ns	ns
	2	ns	ns		
	3	ns	ns		

Key

ns - no statistically significant difference between Immersion and English-taught students

I - Immersion students' average score significantly higher than average score of English-taught students:
*p $\leq$.05 **p $\leq$.01 ***p $\leq$.001

E - English-taught students' average score significantly higher than average scores of Immersion students:
*p $\leq$.01 **p $\leq$.01 ***p $\leq$.001

[1] based on data adjusted for IQ (1978, 1979) or for age and IQ (1971-77)

[2] based on data adjusted for IQ (1979 results), or age and IQ (1971-78 results)

Table 5.3

Grade Equivalents[1] in Mathematics for Grades 3-6 of Cohort 2 in Allenby P.S., Ottawa Board of Education and Carleton Board of Education Early Total Immersion Program

Expected Grade Equivalent	Actual Grade Equivalent	
	Allenby P.S.	OBE/CBE
3.8	4.0	4.2
4.8	5.3	5.1
5.8	6.4	6.0
6.8	7.7	7.0

---

[1] based on scores unadjusted for IQ

absolute figures from other early total immersion programs are in some cases higher and in some cases lower, they are usually at least at the expected grade equivalent, and reflect the general socio-economic and IQ characteristics of the students participating in the immersion program.

Although absolute figures are interesting, the important point here is whether immersion students are doing as well in science and mathematics as their peers in the English program. By comparing the immersion students taking mathematics or science in French to students with similar characteristics but taught in English (and statistically controlling for differences in IQ -- see Chapter 3), the answer which clearly emerges from the results is that early total immersion students are achieving as well as their peers studying mathematics or science in English.

Other evidence which supports the conclusion that early immersion students are able to keep up with their English-educated peers in subjects taught to them in French comes from the Ottawa Roman Catholic Separate School Board (Edwards, Doutriaux, Fu, and McCarrey, 1977). Geography and history tests were developed based on the grade 7 curriculum of the board. The tests were administered in English to grade 7 early immersion students studying history and geography in French and to grade 7 students studying these subjects in English. There were no differences between the two groups on either of the tests. When immersion parents were asked if they thought French immersion hindered the growth of general knowledge, more than 90% said that it did not (McEachern, 1980). Thus, from the evidence available, it would appear that early total immersion students are able to study history, geography, science, and mathematics in French and still maintain achievement levels consistent with students studying the same subjects in English.

The second question raised concerned the effect that the language of the test might have on achievement scores. This is a particularly crucial issue in settings where students are required to take tests in their second language. Students who come from non-English homes but attend English schools are constantly faced with this situation. If they demonstrate inferior performance, is it because they do not possess the content knowedge required to perform satisfactorily on the test, or is it because they are weak in the language of the test? In the case of the immersion students, we know from testing their knowledge about science and mathematics in English that they have achieved satisfactory levels of performance. But what if they were tested in French? There is relatively little information related to this question, but there are two sets of relevant data: one pertains to achievement in social studies, the other to achievement in mathematics.

With respect to achievement in social studies, French and English tests, which were designed specifically to correspond to the grade 4 social studies curriculum in the Ottawa Roman Catholic Separate School Board, were administered to grade 4 students studying social studies in French in two different programs: a total immersion program and a 60-minute-a-day (extended-core) program. Results from the English versions of the test revealed no differences in social studies achievement between the groups. Results from the French versions of the test, however, revealed a highly significant difference between the two groups in favour of the immersion program students. Furthermore, the immersion group performed in French as they had in English, whereas the extended program students' score when tested in French was much lower than when tested in English, even though they had been taught social studies in French. These results suggest that testing students in a second language in which they are not highly proficient may not accurately reflect their level of knowledge and skills related to the content of the test.

The second set of relevant data is related to achievement in mathematics. In the initial years of the Bilingual Education Project, the students in grades 1 and 2 were administered a standardized test of mathematics in French, the Test de rendement en mathématiques. It contained items involving elementary set theory, equations, and the oral presentation of short problems. Half of the immersion students took the test in French, while the other half took a translated version in English. The comparison groups of English-educated students also took the test in English. The results of the three groups were compared at each grade level, and no differences were found among the groups.

Both the above examples -- of achievement in social studies and mathematics -- suggest that total immersion children have mastered enough French to permit an accurate reflection of their competence in mathematics and social studies to manifest itself. At the same time, the results in social studies suggest that testing in the second language is a risk if one wishes accurately to measure achievement in content knowledge and skills.

The overall results of the achievement testing in early total immersion programs imply in a general way that the students' intellectual development has not been affected negatively by their bilingual experience. Another indication is that IQ scores obtained annually show no sign of decreasing over time. Indeed, if one looks at changes in IQ scores over time, one finds a general trend in which the IQ scores of immersion students increase more than those of English-program students (Barik and Swain, 1976f), suggesting possible beneficial effects of the bilingual experience on cognitive development. Edwards, Doutriaux, McCarrey, and Fu (1976) studied the creativity scores of grade 5 and 6 early immersion students in contrast to those of English-program peers, and found that grade 5 early immersion students had higher verbal creativity scores and that grade 6 early immersion students had higher verbal and non-verbal creativity scores. Bruck, Lambert, and Tucker (1974) found that on measures of cognitive flexibility and divergent thinking, when differences between immersion and English-educated students occurred, they consistently favoured the immersion students. There is, therefore, no evidence to suggest that the bilingual education experienced by immersion students has led to any negative consequence with respect to general intellectual functioning.

It is interesting to note as well that there is a trend for the immersion students in the Bilingual Education Project study to have better work-study skills (reading of maps, graphs, and tables, and knowledge and use of reference material) than the comparison groups. As Table 5.4 indicates, of the 22 separate administrations from grade 3 to 8 of the work-study skills section of the Canadian Tests of Basic Skills, the immersion students perform significantly better than their English-educated peers in just over half the testing sessions.

In sum, students in the early total immersion program are able to master the content of such subjects as mathematics, history, geography, and science to the extent that their peers in the regular program have. Furthermore, the total immersion experience seems to have sharpened their work-study skills and has left them with no sign of cognitive confusion. Indeed, the results suggest that the immersion students may be reaping positive benefits, not only in enhanced English language skills, as was indicated in Chapter 4, but also in more specific intellectual skills.

Early Partial Immersion

The information available for early partial immersion programs is much more limited than it is for early total immersion programs, in part because there have been fewer

Table 5.4

Summary of Work Study Skills Results
for Cohorts 1, 2 and 3
in Allenby P.S., Ottawa Board of Education and Carleton Board of Education
Early Total Immersion Program

		GRADE					
	Cohort	3	4	5	6	7	8
Allenby P.S.[1]	1		I ref materials *	I ref materials *	ns	I map reading * ref materials *	
	2	ns	I map reading * graphs/tables *** ref materials *** work study skills total *	I graphs/tables ** ref materials *** work study skills total ***	I graphs/tables *		
	3	I map reading ** graphs/tables ** ref materials *** work study skills total ***	I map reading ** ref materials *** work study skills total *	ns			
OBE/CBE[2]	1			ns	ns	ns	ns
	2		I Map reading * graphs/tables * work study skills total *	ns	I ref materials **		
	3	ns	ns	I graphs/tables * ref materials *** work study skills total **	I ref materials *		

Key

ns - no statistically significant difference between Immersion and English-taught students
I - Immersion students' average score significantly higher than average score of English-taught students:
*p $\le .05$ **p $\le .01$ ***p $\le .001$
E - English-taught students' average score significantly higher than average score of Immersion students:
*p $\le .05$ **p $\le .01$ ***p $\le .001$

[1] based on data adjusted for IQ (1978, 1979) or for age and IQ (1971-77)

[2] based on data adjusted for IQ (1979 results), or age and IQ (1971-78 results)

such programs. In Ontario, there are two well-established early partial immersion programs: one in Elgin County involving a relatively small number of students (see Table 3.4) and one in the Ottawa Roman Catholic Separate School Board involving almost all the students in the board. Unfortunately, the mathematics achievement data available with respect to the Ottawa program are not useful in answering the question of whether the immersion students are able to keep up to English-taught students because mathematics has been taught in English. Science achievement has not been tested in the Ottawa program. Thus, no cross-program comparisons are possible with respect to achievement data. A third partial immersion program, which was established in Edmonton in 1974, has also been evaluated (Edmonton Public Schools, 1980), and provides some useful comparative information on the mathematics achievement of students in early partial immersion programs.

Table 5.5 presents the results from Elgin County in mathematics achievement. The results indicate either that there are no differences between the partial immersion students and their respective English-educated comparison groups, or that the partial immersion students do not do as well on some of the subtests and/or the mathematics test as a whole. In no case does a partial immersion group outperform its comparison group. The Edmonton Public Schools (1980) results also show inferior performance on the part of partial immersion students in grade 3 and 4 (but not grade 5). These results suggest that partial immersion

Table 5.5

Summary of Mathematics and Science Achievement and Work Study Skills Results
for Cohorts 1, 2 and 3
in Elgin County Board of Education
Early Partial Immersion Program[1]

		GRADE						
	Cohort	1	2	3	4	5	6	7
Mathematics	1			ns	ns	ns	E concepts *** math total *	▣ ns
	2		ns	ns	E computation *** math total **	ns	▣ ns	
	3	ns	ns	E computations *** concepts *** prob solving ** math total ***	ns	▣ E concepts *		
Science	1						E **	ns
	2					ns	ns	
	3					E *		
Work Study Skills	1						ns	ns
	2					ns	ns	
	3				ns	ns		

Key

ns - no statistically significant difference between Immersion and English-taught students

I - Immersion students' average score significantly higher than average score of English-taught students:
*p ≤.05 **p ≤.01 ***p ≤.001

E - English-taught students' average score significantly higher than average scores of Immersion students:
*p ≤.05 **p ≤.01 ***p ≤.001

▣ taught in English

[1] based on data adjusted for age and IQ

students may be at some disadvantage in acquiring mathematical skills and knowledge in French. It has been suggested (Swain, 1978a) that this is because their French skills, which at these grade levels are not on a par with those of early total immersion students (see Chapter 4), may be insufficient to deal with the more complex aspects of the subject matter about which they are being instructed in these grades.

What happens if the partial immersion students are taught mathematics in English after being taught it in French? This, in fact, was done in the 1977-78 academic year in Elgin County, so that grades 5, 6, and 7 (Cohorts 3, 2, and 1 respectively) were taught mathematics in English. The results are ambiguous: the grade 7 partial immersion group's performance improved relative to its comparison group, whereas the reverse was the case for the grade 5 partial immersion group.

The science achievement data (Table 5.5), also indicates either no differences between the partial immersion students and their respective comparison groups, or inferior performance on the part of partial immersion students. It would seem, therefore, that the general trend indicated by the information currently available is that relative to early total immersion students, early partial immersion students may experience more difficulty in maintaining standards in subjects taught to them in French commensurate with those of their English-educated peers. Furthermore, in terms of work-study skills, they show no advantage over their respective comparison groups (see Table 5.5), as was the case for early total immersion students. The IQ scores of the Elgin County immersion students were initially high, and remained high throughout the years of testing. This suggests, as with total immersion students, that the bilingual education experience did not result in negative consequences with respect to general intellectual functioning.

Late Immersion

In the Peel County late immersion program, mathematics, science, history, and geography were taught in French in grade 8. In later grades, only history and geography were taught in French. Achievement in all these subjects has been measured in grades 8, 9, and 10.

The initial grade 8 late immersion group was given a standardized science test at the beginning and end of the year. They did as well as their comparison group at the beginning of the grade 8 year but not at the end of the year. This finding was interpreted as revealing a slight negative effect of the late immersion program on general science concepts attainment. In the following years, however, when the late immersion students were taught science in English, their performance was equivalent to that of students who had not taken science in French in the grade 8 year.

Mathematics achievement has also been measured, with inconsistent results. Of the three cohorts of late immersion students followed by the Bilingual Education Project in Peel County (see Table 3.5), one grade 8 group's performance was equivalent to that of its English-instructed group, a second group scored better than its comparison group, and a third group did not perform as well as its comparison group. When taught mathematics in English the following year, the first group demonstrated an achievement level equivalent to that of its comparison group, the second group maintained its superior performance, and the third group was not retested.

In other studies of late immersion programs where mathematics has continued to be taught in French, the results indicate that the immersion students do as well in mathematics as their English-instructed comparison groups (e.g. Edwards, McLaughlin, McCarrey, and Fu, 1978; MacDonald, 1980) or in some cases better, or worse, than students studying mathematics in English (e.g. Wightman, 1977). Wightman suggests that, based on comparisons across immersion classes, factors other than the immersion experience may be influencing the mathematics score.

History and geography achievement in late immersion programs has also been measured. In Peel County, late immersion students took locally developed tests based on the high school history and geography curriculum three times a year. Their average scores in grades 9 and 10 ranged from 70% to 80%. These figures are not directly comparable to those of students taught history and geography in English, as the latter were given different tests. However, the scores obtained by the late immersion students in history and geography were consistent with their own scores in other subjects and with scores obtained by their comparison groups when tested in English. Edwards, Doutriaux, McCarrey, and Fu (1977) found that on locally developed tests, late immersion students in grade 7 (their initial year) demonstrated equivalent levels of achievement in history and geography as students studying these subjects in English. Hendelman (1975) reports similar results for late immersion students in the Ottawa Board of Education.

Results from Montreal reveal that, for those late immersion students who have continued to take several course options in French throughout secondary school, average scores obtained on Leaving Examinations taken in French are higher than those obtained by francophones in the rest of Quebec. These examinations include histoire, géographie, and mathématiques (Genesee, 1976d).

Overall, the results associated with the mastery of content by late immersion students are somewhat inconsistent. In some cases, late immersion students do not perform as well on tests of subject achievement taught in French and tested in English as do their English-instructed counterparts. The results appear to be related to the subject and to the amount of prior core French instruction that the students have had. Where late immersion students have had core French instruction each year through to the immersion year, as in Montreal and Ottawa, the level of mastery of content taught in French appears to be be comparable to that attained by English-instructed counterparts (Genesee, Polich, and Stanley, 1977; Stern et al., 1976b). If the amount of prior core French instruction is more limited, however, poorer performance in some subject areas (e.g. science) has been noted. As was suggested for early partial immersion students, this may be because their second language skills are not sufficient to cope completely with the complex subject matter being taught to them in French.

Conclusions

The information presented in this chapter suggests that in general and over the long run, immersion students are able to maintain standards of achievement consistent with those of their English-educated peers. This is not always the case, however, on a short-run basis, particularly for students in early partial or late immersion programs where their second language skills may initially be insufficient to deal with the complexities of the subject material taught to them in French. The work-study skills of immersion students have not suffered. Indeed, the information available suggests that they may have been enhanced in the early total immersion environment. Furthermore, there is no evidence which suggests that an early exposure to bilingual schooling results in cognitive confusion. Rather normal intellectual growth occurs, with some indication that growth may be fostered in an early total immersion setting.

That academic achievement can be maintained at expected levels when the subject is taught in French leaves open the choice of subjects to be taught in French. A subject which allows students many opportunities to hear and use the second language in creative ways and in context-rich topics seems to us most appropriate.

6

Social and Psychological Aspects of Immersion Education

Most of the research associated with immersion education has been concerned with its academic and linguistic consequences. Little attention has been paid to the social and psychological aspects of immersion education. Some notable exceptions, in the research carried out in Ontario and Quebec, will be considered in this chapter.

There are two facets to the issue of social and psychological aspects of immersion education. First, there is the question of the children's adjustment to the program, especially the adjustment of young children to the early total immersion program. It was felt by some parents and educators that beginning school (which already involved an adjustment for the children), coupled with not being able to understand the teacher, might create problems. Their concern was fed by a mistaken belief that the children would be denied the possibility of spontaneously expressing their feelings and ideas because they would be allowed to speak only in French. This, as we have already seen, is not what occurs in an early immersion program. True, the teachers speak only French, but they understand English, and for much of the first year the children talk to each other and their teachers in English. The children are certainly not inhibited from expression in their mother tongue. Second, there is the question of the impact of immersion programs on students' feelings -- feelings towards themselves and speakers of the target language, as well as to the wider socio-political and socio-cultural context in which they live.

Social Psychological Adjustment to School

In the study of early total immersion and extended-core programs in the Ottawa Roman Catholic Separate School Board (Edwards and Smyth, 1976a), the classroom behaviour of the children was rated by their teachers up to the grade 5 level. (The extended-core program begins in grade 1 and usually involves teaching one subject area in French along with French language arts for an extended period of 60 to 75 minutes.) Three subtests of the Pupil Rating Scale (Myklebust, 1971) were used: auditory comprehension, spoken language, and personal-social behaviour. The results, summarized in Edwards, Colletta, Fu, and McCarrey (1979a), show that the teachers either tend not to find any differences between the two groups or tend to favour the early immersion group. This suggests that the early immersion children did not have any noticeable difficulty adjusting to their school experience.

Another way of approaching the issue of adjustment to their school experience is to question students directly about their current program, about the type of program they would have preferred, and about the type of program they would prefer in the future.

Using a questionnaire, Lambert and Tucker (1972) asked grade 4 and 5 students who had been in the St. Lambert early total immersion program and their English-educated comparison groups who had studied core French from grade 1 on to express their opinions about the French programs they were enrolled in. For example, they asked them, "Do you enjoy studying French the way you do at your school?" Forty-five per cent of the grade 4 and 52% of the grade 5 immersion children responded, "I enjoy it very much", whereas only 18% of the grade 4 and 16% of the grade 5 core French children answered in this way. When asked, "Would you rather go to an all-English school?", 3% of the grade 4 and 4% of the grade 5 immersion students responded with "Yes, I would very much", whereas 31% of the grade 4 and 46% of the grade 5 core French children answered in this way. At the other end of the scale, 75% of the grade 4 and 68% of the grade 5 immersion students responded, "I enjoy school as it is". Only 31% of the grade 4 and 27% of the grade 5 core French students said that they enjoyed school as it was. The students were also asked, "In your opinion, is too much time spent on French?" Seventy-five per cent of the grade 4 and 80% of the grade 5 immersion children agreed that "Just about the right amount of time is spent on French", whereas 63% of the grade 4 and 37% of the grade 5 core French children agreed with this statement. Finally, when asked, "Do you want to continue learning French?", the immersion students were more likely to answer, "Yes, I want to very much" (70% in grade 4 and 84% in grade 5) than were the core French students (55% in grade 4 and 37% in grade 5). Indeed, 12% of the grade 4 and 19% of the grade 5 core French students responded, "I don't really want to learn French anymore", whereas virtually none of the immersion students answered in this way. These figures suggest a general endorsement by immersion students of their program and their mode of French study.

The grade 5 students who filled out questionnaires in the study discussed above and who could be located in their graduating year (grade 11), were sent another questionnaire and were also interviewed in their homes with their parents (Cziko et al., 1978). In general it was found that "there is a very clear appreciation for the early immersion experience on the part of the early immersion students and their parents who, in the vast majority, say that they would choose the immersion option if they had to do it all over" (p. 23). Furthermore,

> Having experienced immersion schooling, both the early immersion students and their parents are more inclined to see the merits of going even further in forms of immersion to the point of full contact with French students in French language schools. Rather than viewing "submersion" in a total French school as a radical step, one that might adversely afffect a child's identity and native language competence, it is seen more as a natural and obvious extension of early immersion by a substantial number of early immersion students and their parents. (Cziko et al., 1978:24).

Thus, the results of the St. Lambert study suggest that early immersion students and their parents are generally satisfied with the program and take as natural and appropriate the idea of going a step further towards integrated schooling in the other language community.

In Ontario, grade 8 students in the Peel late immersion and in the Ottawa and Carleton early total immersion programs were asked about their program preferences (Lapkin et al., 1980), as were the grade 8 early immersion students and extended-core students of the Ottawa Separate Board (Edwards, Colletta, Fu, and McCarrey, 1979a). Although direct comparison of results between the studies is difficult, because different ways of analysing the data were used, the results show that the early immersion students in both studies were more likely to respond that they would prefer a bilingual high school program and that the amount of time spent in French during the school day was "about right" or "a bit too short". The late immersion and extended-core students were more likely to respond that they would prefer a program with less French in it and that the amount of time spent in French was "a bit too long". These results indicate a greater satisfaction with their program among early immersion students than among late immersion or extended-core students at the grade 8 level. Indirectly, these results suggest as well that the early total immersion students have made at least as satisfactory an adjustment to their school experience as students in other types of programs.

Social Psychological Perceptions

Virtually all the research pertaining to the feelings or attitudes of immersion students towards themselves, their own ethnic group, and other ethnic groups has been carried out in the Montreal area. Were similar studies carried out in other cities in Canada, the results might differ somewhat. It is our opinion, however, that at least the results related to the immersion students' feelings about themselves and their own ethnic group would not differ in important ways. As for their attitudes towards the target language group (French-Canadians), the Montreal setting may well influence the results. Nevertheless, we consider the findings to be of considerable interest in demonstrating the combined impact of immersion schooling and the milieu.

There are several reasons why one might expect the learning of a second language to have an effect on the social psychological make-up of an individual. For example, learning a second language permits the possibility of contact with, and therefore possible socialization by, another cultural group (Genesee, 1980b). The nature of the contact and the status of the language/culture, among other things, will influence the effects of the contact, which is one reason we might expect to find differences between English speakers learning French in Montreal and in, for example, Toronto or Vancouver. Furthermore, to the extent that language is seen as an important symbol of ethnicity, then learning a second language might influence one's perception of oneself and/or one's perception of the other group.

Perception of self and own ethnolinguistic group. In the early grades (2 to 5) of the St. Lambert study, the

French immersion and English comparison groups were asked to rate themselves and English-Canadians on 13 bipolar dimensions such as friendly/unfriendly, industrious/lazy, and calm/emotional (Lambert and Tucker, 1972). The immersion and comparison groups both made favourable assessments of themselves and of English-Canadians.

In another study probing the ethnic identities of immersion children, Genesee, Tucker, and Lambert (1978a) used a doll preference technique. The child is asked to indicate how similar (dissimilar) he/she is to each of a number of dolls that represent different ethnolinguistic groups. English-speaking students in English schools, French schools, and immersion schools from grades 1 to 5 were tested. There were no appreciable differences between the groups at any grade level with respect to English-Canadian identity.

Another technique used in studies of social perception, known as multidimensional scaling, asks respondents to rate pairs of concepts such as "myself" and "monolingual English-Canadians" in terms of their perceived similarity/dissimilarity. The grounds for making these judgments are left to the respondent. Analysis of the judgments using multidimensional scaling summarizes and graphically describes the perceived similarities/dissimilarities, as well as the dimensions used in making judgments.

Cziko, Lambert, and Gutter (1979) used this technique by having eight groups of children make judgments of degrees of similarity among ten relevant concepts: monolingual English-Canadians, bilingual English-Canadians, monolingual French-Canadians, bilingual French-Canadians, Italian-Canadians, English people from England, French people from France, Americans, your teacher, and yourself. The eight groups of students involved in the study were grade 5 and grade 6 students in an English program; grade 5 and grade 6 students in an early total immersion program; grade 5 and grade 6 students in a "late" immersion program; and grade 5 and grade 6 French students in a French school. The "late" immersion students had participated in a one-year French immersion program at grade 4.

Two major clusters of concepts were identifiable in the students' responses: one related to the English language and English-Canadians, and another related to the French language and French-Canadians. The immersion students (early and late) and the English program students both perceived themselves to fall within the English cluster; however, the early immersion students perceived themselves as more similar to bilingual English-Canadians and bilingual French-Canadians than did the late immersion or English program students. The authors conclude: "...the early immersion experience seems to have reduced the social distance between self and French-Canadians, especially French-Canadians who are bilingual" (Cziko, Lambert, and Gutter, 1979:26). Genesee (1977b) also found (using multidimensional scaling) that there is a reduction in perceived social distance from French-Canadians by grade 6 immersion students relative to grade 6 English program students. Lambert and Tucker (1972) report that when grade 4 and 5 immersion and English-educated (with core French component) children in the St. Lambert study were asked, "After studying French for several years ... do you think you have become less English-Canadian in your thoughts and feelings; or do you see yourself now as being both English- and French-Canadian, or as more English-Canadian?", 65% of the grade 4 and 66% of the grade 5 immersion children responded, "both English and French", while 27% of the grade 4 and 13% of the grade 5 English-educated group responded in this way.

In summary, it appears that immersion students have maintained a basic identity with an English ethnolinguistic reference group (Genesee, 1977b). However, early immersion students tend to see themselves as more like English-Canadians and French-Canadians than do late immersion or English program students, thus reducing the perceived English-Canadian/French-Canadian gulf to a significant degree.

Perception of target language group. In the St. Lambert studies in which Lambert and Tucker (1972) had early total immersion and English comparison groups rate themselves and English-Canadians on 13 bipolar dimensions, they also had the students rate French-Canadians and European French people. It was found that the French immersion children in the early grades (2-3) had more favourable attitudes towards French-Canadians and European French people than did the

English-educated comparison group. However, there were no such differences found between the same groups of children at later grades (4 and 5).

Nevertheless, when the same grade 5 immersion and English comparison students were asked directly about their feelings and attitudes towards French-speaking people, the immersion students were clearly more positive. For example, when asked "Since you have been learning about French people at school, do you like French-Canadians more now than you did before?", 64% of the grade 5 immersion students responded, "I like them more now than I did before", whereas only 15% of the English comparison group responded in this way. Similarly, when asked, "Suppose you happened to be born into a French-Canadian family would you be just as happy to be a French-Canadian as an English-Canadian person?", 84% of the grade 5 immersion children responded, "just as happy to be French-Canadian", whereas only 48% of the English-educated group responded in this way.

When the same grade 5 immersion and comparison children were sent questionnaires and were interviewed in grade 11, their graduating year, it was found that the early total immersion students showed a more positive attitude towards French-Canadians, used French more frequently with their French friends, and were more willing to make use of French in their contacts with the French-speaking community than were the English comparison students (Cziko et al., 1978; see also Genesee, 1980a).

Other studies have examined the attitudes of both early and late immersion students towards French-Canadians, using techniques similar to those used by Lambert and Tucker (1972): e.g. Cziko, Holobow, and Lambert (1977a, b); Cziko, Holobow, Lambert, and Tucker (1977); Genesee, Morin, and Allister (1974a); Genesee, Polich, and Stanley (1976). In general, the results show that in the first year or two of the immersion program, the attitudes of the immersion students may be more positive towards French-Canadians than those of the English comparison groups. However, in later years of the program, the immersion students fail to express significantly more positive attitudes than non-immersion students. Nevertheless, in no case have the attitudes of immersion students towards French-Canadians been less favourable than those of their English-educated comparison group.

> It may be that the attitudes of immersion students, although initially more positive, come to be the same as those of students in a regular program since there is an absence of real social contact with members of the target language, a lack of behavioural or social evidence on which to sustain positive attitudes beyond introductory immersion. (Genesee, 1980b:16)

The lack of sustained contact with members of the target language group that Genesee refers to is a problem which, for different reasons than in Montreal, faces most immersion students in many Canadian cities. In these cities, the francophone population is small, and contact with francophones is difficult to establish in French because they are so fluently bilingual (Swain, 1981). This lack of contact may affect not only the failure to generate more positive attitudes, but also the failure to make significant progress beyond a certain plateau in speaking French (see Chapter 4 for details).

Although the results from the studies noted above using highly evaluative attitudinal measures have tended to show no differences between the immersion and non-immersion groups after a year or so of the immersion program, we have seen that in other studies where similarity/dissimilarity judgments have been used (e.g. Cziko, Lambert, and Gutter, 1979; Genesee, 1977b), early French immersion students tend to view themselves as less different from French-Canadians than do non-immersion students.

> It may be that the immersion students' familiarization with French-Canadians through interaction with French-speaking teachers and through exposure to curricular material in French has made them realize fundamental similarities between the two ethnolinguistic groups that might otherwise be masked by more superficial language differences. The development of this kind of non-evaluative but socially-relevant perspective could be an important precursor for establishing positive intergroup attitude and/or social contact with members of the other group. (Genesee, 1980b:18)

Socio-political and socio-cultural perceptions of Canada. It is possible that the educational experience of the immersion students might lead to a more sophisticated understanding of the socio-political French-English situation in Canada, as well as of the socio-cultural mosaic of Canada.

To investigate the latter question, grade 5 and 6 early total immersion students and their English-educated peers in Ottawa and Toronto were asked to write a composition on the topic of "Why I like (or do not like) being Canadian" (Swain, 1980a). Each composition was subjected to a content analysis and the substantive comments that had been written were identified and tabulated. Several interesting findings emerge from this study. First, the immersion students' commentary spanned a much broader perspective; that is, in grade 5 the immersion children gave twice as many reasons for why they liked being Canadian as their English-educated peers, and in grade 6, the immersion children gave three times as many reasons as their English-educated peers. Second, among the reasons given, over 30% of the immersion children (as compared to approximately 10% of the regular program students) commented specifically on the rich and varied cultural and/or linguistic composition of Canada. For example, one grade 5 student wrote:

> I like being Canadian because we have people from all over the world who may live just next door. Here in Canada you hear different languages and styles ... And most of all we care.

Similarly, over 20% of the immersion children, but none of the English-educated children, commented on the possibility in Canada of being able to speak more than one language, and how they appreciated the opportunity. In general, most of the compositions written by the English-educated students focussed on the natural beauty of Canada as opposed to the "beauty" of linguistic and cultural diversity which was more likely to be emphasized in the total immersion students' compositions.

Along a similar line, Blake et al. (n.d.) gave students a choice of topics to write about, including: "What are, in your opinion, the two most important problems between English-speaking and French-speaking Canadians?" and "If you feel that there are difficulties between English-speaking and French-speaking Canadians ... what could be done so that English- and French-speaking Canadian young people would get along better?" The students involved in this study were bilingual and essentially unilingual anglophone and francophone students at the grade 6 and 11 levels. The bilingual anglophone students had participated in a French immersion program from Kindergarten or grade 1 on. The discussion of the results is limited below to those of the grade 11 students.

The most frequently cited problem by the students is language differences, and it is the unilingual francophone group in particular who stress this problem. They also cite differences in customs and culture as a problem at least twice as frequently as the other three grade 11 groups. The unilingual anglophone group, on the other hand, cites the issue of pressure towards separation and national disunity at least twice as frequently as the other groups. Thus, although the possibility of separation may underlie political differences, it may be significant that the immersion students are less likely than the unilingual English students to mention this possibility specifically.

The bilingual groups -- francophone and anglophone -- cite as problems the segregation of the two groups and stubbornness and resistance to getting along much more frequently than the unilingual groups.

The differences among the groups in the solutions they offer are interesting. The bilingual students suggested solutions involving greater intergroup contact much more frequently than the unilingual students. The immersion students suggested more frequently than all other groups that emphasis be placed on mixing anglophones and francophones in bilingual schools, and on learning about one another's culture. The bilingual francophones, on the other hand, more frequently suggested exchange programs in which students live for a short time in each other's homes as a means of achieving greater intergroup contact. The authors conclude:

> ... having mastered the fundamentals of the other group's language and way of life, the bilingual can then see beyond the simple solution of language competence as a determiner of intergroup harmony to the more basic need of integrating with, going to school with and interacting with the other group. ...the bilinguals may be more sophisticated in the solutions they suggest for reducing intergroup tensions because of their knowledge of and sensitivity to the other group's point of view. (Blake et al., n.d.:24)

It is also a sign of their sophistication that the bilinguals were more likely to see one of the major problems as segregation rather than separation.

Conclusions

In this chapter we have looked at some social and psychological aspects of immersion education. First, the adjustment made by immersion children to their school experience was examined by looking at studies of the children's behaviour in class and their views about their school program. The results suggest that early immersion students adjust readily to their school environment, and report satisfaction with their program and their way of studying French -- more so than do late immersion students, or students studying core French in short daily periods.

Second, the feelings that immersion students hold towards themselves, their own ethnic group, and the target language group were examined. The findings, mostly from early total immersion students in the Montreal area, indicate that early immersion students view themselves, English-Canadians, and French-Canadians in at least as positive a light as do their English-educated counterparts; and sometimes more positively, although this effect may be limited to the initial year or two of immersion schooling unless sustained contact with target group members occurs. Nevertheless, early total immersion students tend to see themselves as more similar to French-Canadians than do their English-speaking peers, suggesting that immersion students have developed less rigid ethnolinguistic stereotypes of target group members.

Third, the socio-political and socio-cultural views of early total immersion students were examined. Immersion students in Ontario are more likely to comment on Canada as a nation of rich linguistic and cultural heritage than their English-educated counterparts. Immersion students in Montreal, along with their bilingual francophone peers, are more likely to see the problems facing English- and French-Canadians in terms of segregation rather than separation, separation being how their unilingual peers characterize the problem. Furthermore, bilingual students tend to see greater interethnic contact as the key to the solution of French-English tensions in Canada.

Whether the immersion students' views are the result of their schooling experience, the influence of their parents, or their experience in the wider community cannot be determined from the studies undertaken. Probably their views reflect the interaction of all three. Practically speaking, the source of their views is probably less important than their existence, which can be looked upon as a potentially positive force in the climate of events in Canada today.

7 Summary and Conclusions

Much has been learned about bilingual education in Ontario over the last ten years. In this report, three alternative approaches to French immersion education have been discussed. The three program variations make available to an increasing number of English-speaking students in Ontario and throughout Canada the opportunity to reach advanced levels of French proficiency while studying the same school curriculum content as they would in a regular English program.

The evaluation of early total, early partial, and late immersion programs by the Bilingual Education Project at OISE began in 1970 and testing continued until 1979. In discussing the findings, not only the answers provided by the research have been summarized but also some of the questions which remain unanswered have been identified.

One of these questions was discussed in Chapter 2. Although a small number of studies confirm that the immersion approach, emphasizing the communication of meaningful content material through French, is being put into practice in early and late immersion classrooms, much work remains to be done in this area. For example, effective teaching strategies in immersion classrooms need to be identified and described. This information would be useful not only as input to teacher training programs, but would also serve to broaden our understanding of the processes of second language learning.

In Chapter 3, the research questions reflecting the concerns of parents and educators were reviewed. The tests, procedures, and design used in the research were discussed and some comments with respect to their relative strengths and weaknesses were made. The design of the research conducted by the Bilingual Education Project allows for questions to be answered of the sort: "How do French immersion students perform on tests in English relative to students educated in English with similar socio-economic and IQ characteristics?"; "How do immersion students perform on tests of French proficiency relative to core French students, to other immersion students, and/or to francophone students?" The design also allowed for an assessment of the same group of immersion students as it progressed through the grades, as well as an assessment of new groups of immersion students taking the program in succeeding years.

Chapter 4 provides an overview of the linguistic outcomes associated with the three French immersion alternatives evaluated by the Bilingual Education Project. Listed below are the conclusions that one can draw, based on a synthesis of all available information, including evaluations conducted by other researchers in Ontario and throughout Canada.

1. In the area of English language skills, immersion students in all three programs exhibit temporary lags relative to the performance of regular English program groups. In early total and early partial immersion, the

immersion students' weaker performance lasts until about the end of grade 3, whereas for late immersion the lag is shorter, or does not occur at all. The overall trend in subsequent grades is for immersion students to perform as well as or, in the case of early total immersion students, better than their English-educated counterparts.

2. As far as French skills are concerned, early total immersion students attain near-native proficiency in listening and reading comprehension, and achieve as well as an average class of francophone students in Montreal on a French achievement test. Their productive skills, speaking and writing, remain non-native-like, although they have no difficulty in conveying what they want to say.

3. Early partial French immersion produces less dramatic results in that it takes longer for the students to match the performance of early total immersion groups. By grade 8, however, based on the very limited data from one class in Elgin County, the performance of early partial immersion students resembles that of grade 7 early total immersion students on tests given in common.

4. The French skills of late immersion students appear to remain well below those of francophone comparison groups, even after several years of immersion. When the performance of Ontario late immersion students at grade 8 after one, two, or three years in the program is compared with that of early total immersion students at the same grade level, the early immersion groups are well ahead.

5. The perceptions and self-assessments of grade 8 immersion students' French correspond to the findings summarized in (4) above. Early total immersion students consider themselves more skilled in French than late immersion students and would prefer to spend a greater percentage of their school day studying in French.

6. In the evaluations of the three immersion program alternatives, comparisons with the French performance of core French students have revealed that the immersion students' performance is almost always significantly better than that of core French students.

7. Final comparisons of the French proficiency of early and late immersion students in Ontario must be deferred until the early immersion groups have reached the end of secondary school. A preliminary consideration of relevant findings from Montreal suggests that the design of each program (e.g. intensity of exposure to French at particular levels) is a key factor.

8. The level of French skills attained by students in immersion programs may also be related to the school setting. Thus, findings from one study suggest that the program in an immersion centre where no regular English program exists produces better results (superior French listening and reading scores, for example) than housing it in a dual-track school.

9. Early total immersion students' spoken French is generally assessed favourably by francophone adults and students. Their patterns of French language use, however,

indicate that they tend not to seek out opportunities for using their second language skills, but respond in French when conversation is initiated in French. This appears to hold for both early and late immersion students, who differ, however, in terms of their use of French in the classroom with the teacher. In the latter context, early immersion students report a significantly greater use of French.

10. The ability to learn to communicate functionally in the second language is not related to intelligence as measured by standardized IQ tests.

Achievement in school subjects such as mathematics, science, and social studies is the subject of Chapter 5, where results from relevant content testing are reviewed. It may be unfair to test students from partial immersion programs (both early and late) in French, as they may not have a sufficiently high level of proficiency in the second language to permit them to demonstrate their knowledge of the subject area or skills related to a particular subject area. Early total immersion students, however, appear able to cope equally well with tests of subject matter achievement administered in French or in English. The conclusions that may be drawn with respect to the academic outcomes of immersion programs are listed below.

1. Immersion education has not had negative effects on the students' general intellectual development, and, in the case of early total French immersion, may lead to its enhancement.

2. In mathematics, science, and social studies early total immersion students generally achieve as well as students studying these subjects in English. Early partial and late immersion students appear occasionally to have some difficulty relative to their comparison groups in acquiring mathematical and science skills. The difficulty experienced may be related to limitations experienced because of weaker second language skills.

3. The work-study skills of early total immersion students tend to be superior to those of their English-educated peers. No such trends are noticeable in the results of early partial immersion students.

In Chapter 6, studies of social and psychological aspects of immersion education were presented, much of the data coming from Montreal. The results indicate that early immersion students adjust smoothly to their school environment, and are more satisfied with their program than are late immersion students. Most of the studies reviewed concerned early immersion students: in general their self-concept is positive; they feel themselves to be English-Canadians rather than French-Canadians, but tend to develop less rigid ethnolinguistic stereotypes than their English-educated counterparts. Immersion students favour increased contact with francophones, a step which is likely to prove beneficial not only for developing more positive attitudes, but also for enhancing French language skills.

There seems little question that all three immersion programs have proven successful in promoting advanced French language skills, and that immersion constitutes a viable alternative form of education in Ontario and elsewhere in Canada.

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